InteGreyted International

COOPER INDUSTRIES, INC.

PRELIMINARY SITE ASSESSMENT WORK PLAN
NORTH AND SOUTH LANDFILLS
CROUSE-HINDS FACILITY
SYRACUSE, NEW YORK

9 JANUARY 2004

Prepared for:

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InteGreyted Project No. 0310025P

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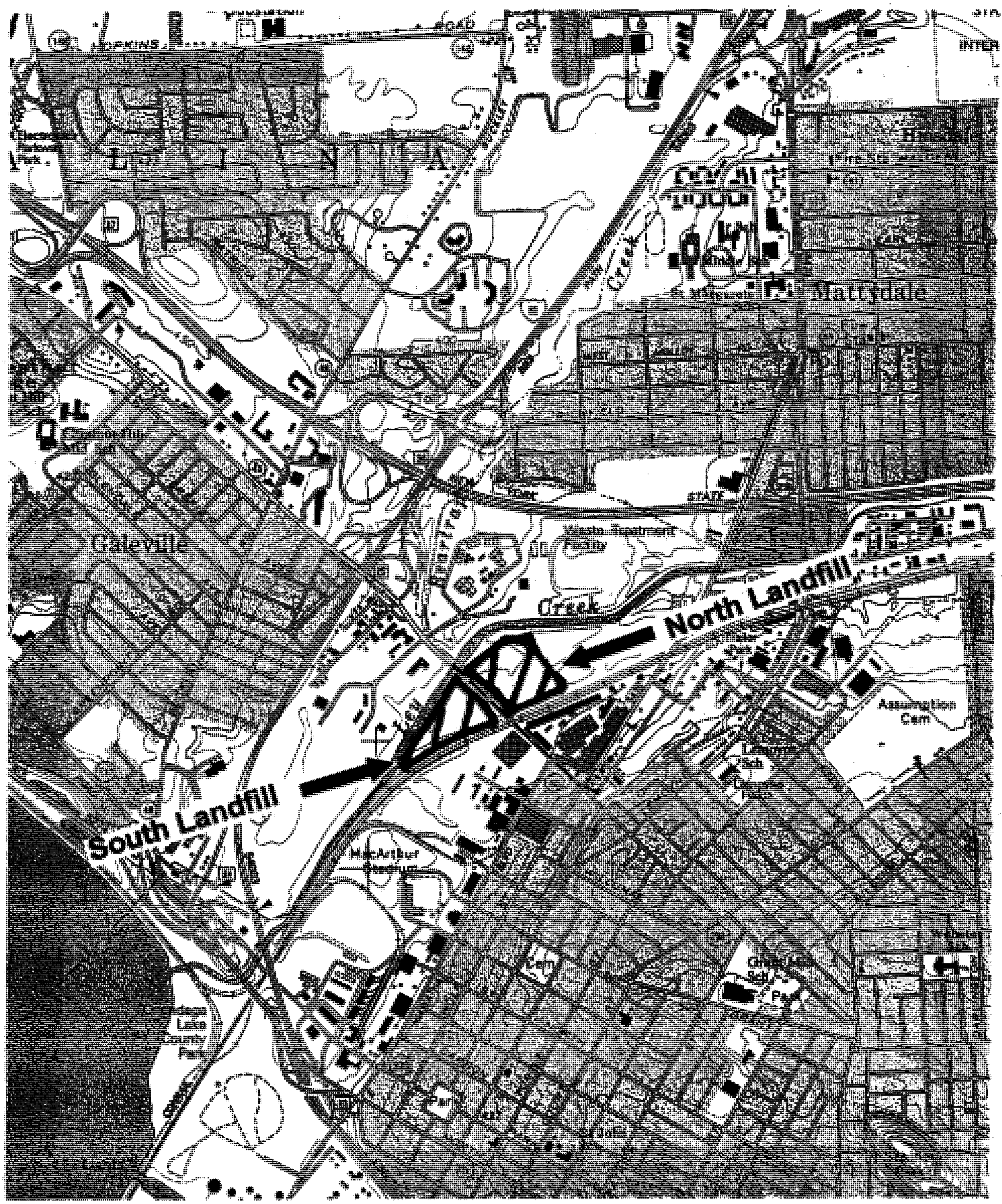
1.0 SITE LOCATION / PHYSICAL SETTING

The subject site is located northwest of the operating Crouse-Hinds Company manufacturing facility, which is located at the intersection of Wolf and Seventh North Streets (Latitude 043° 04' 28" N, Longitude 076° 10' 13" W), in the Town of Salina and the City of Syracuse, Onondaga County, New York. The subject site (hereinafter the "Site") consists of two adjacent inactive landfills (referred to as the North Landfill and South Landfill). According to available information, the North Landfill is approximately 21 acres in area and the South Landfill is approximately 15 acres in area. Site and surrounding topography is generally flat to gently sloping. Figure 1-1 is a Site Location Map and Figures 1-2 and 1-3 present Site Plans of the North Landfill and South Landfill, respectively.

The North Landfill is located in the Town of Salina and the South Landfill is located in the City of Syracuse. The Site is located in an area of mixed usage including light industrial/manufacturing, commercial and residential. Seventh North Street is oriented east-west and separates the two landfills that comprise the Site. Undeveloped woods and wetlands border the Site to the north. Railroad tracks followed by the Crouse-Hinds facility, Wolf Street and residential development border the Site to the east. Undeveloped woods, wetlands and mixed commercial development border the Site to the south. Wetlands followed by Ley Creek, mixed commercial development, the Ley Creek waste transfer station and I-81 are present to the west of the Site. The northwest boundary of the North Landfill is separated from Ley Creek by property reportedly owned by Plaza East, LLC. The northwest boundary of the South Landfill is adjacent to Ley Creek.



Syracuse West, NY Quadrangles (1990)

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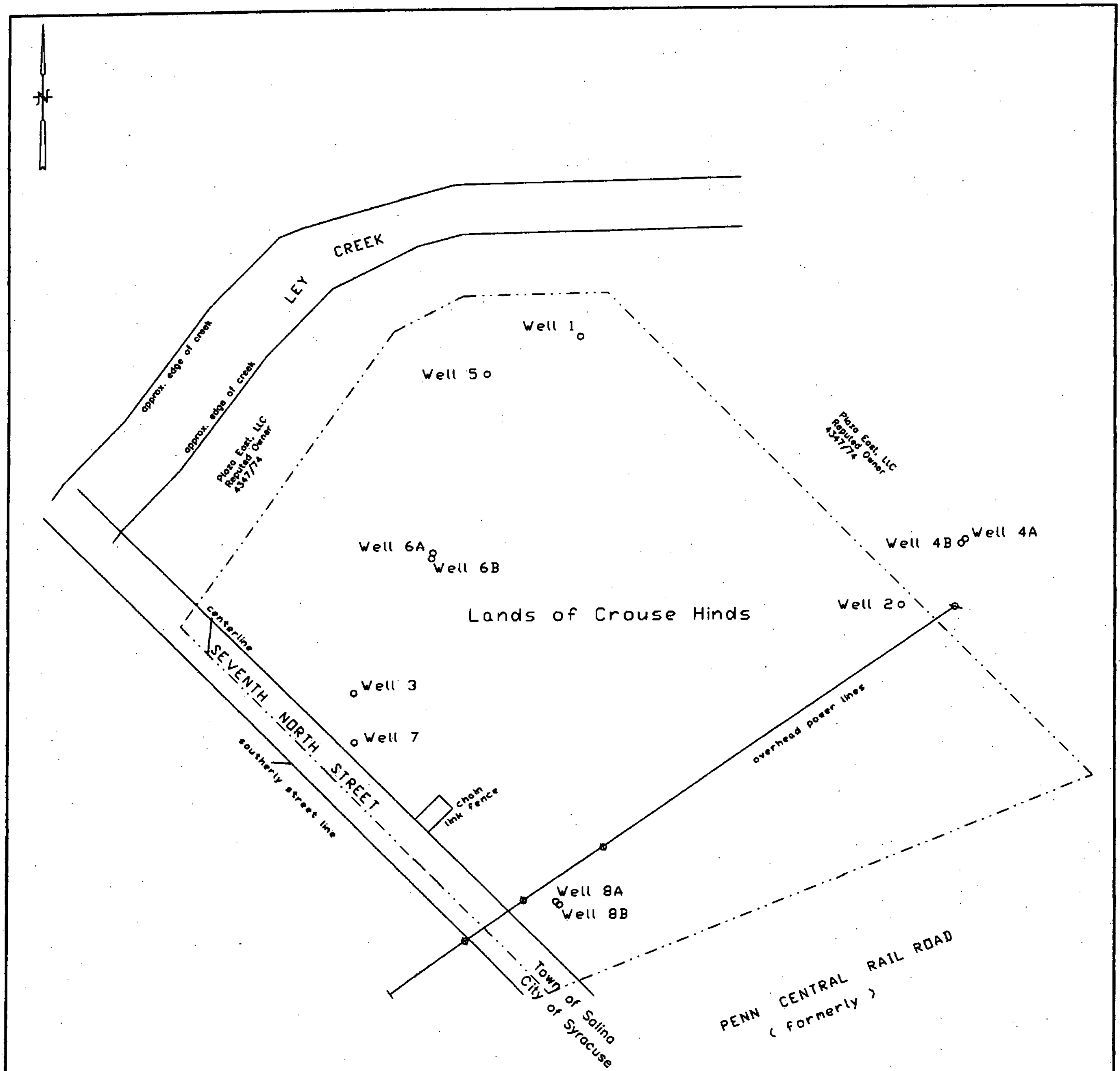
DATE	1/04
SCALE	1"=2,000'

Site Location Map

North and South Landfills
Crouse-Hinds Facility
Syracuse, New York

PREPARED FOR:
Cooper Industries, Inc.

FIGURE
1-1



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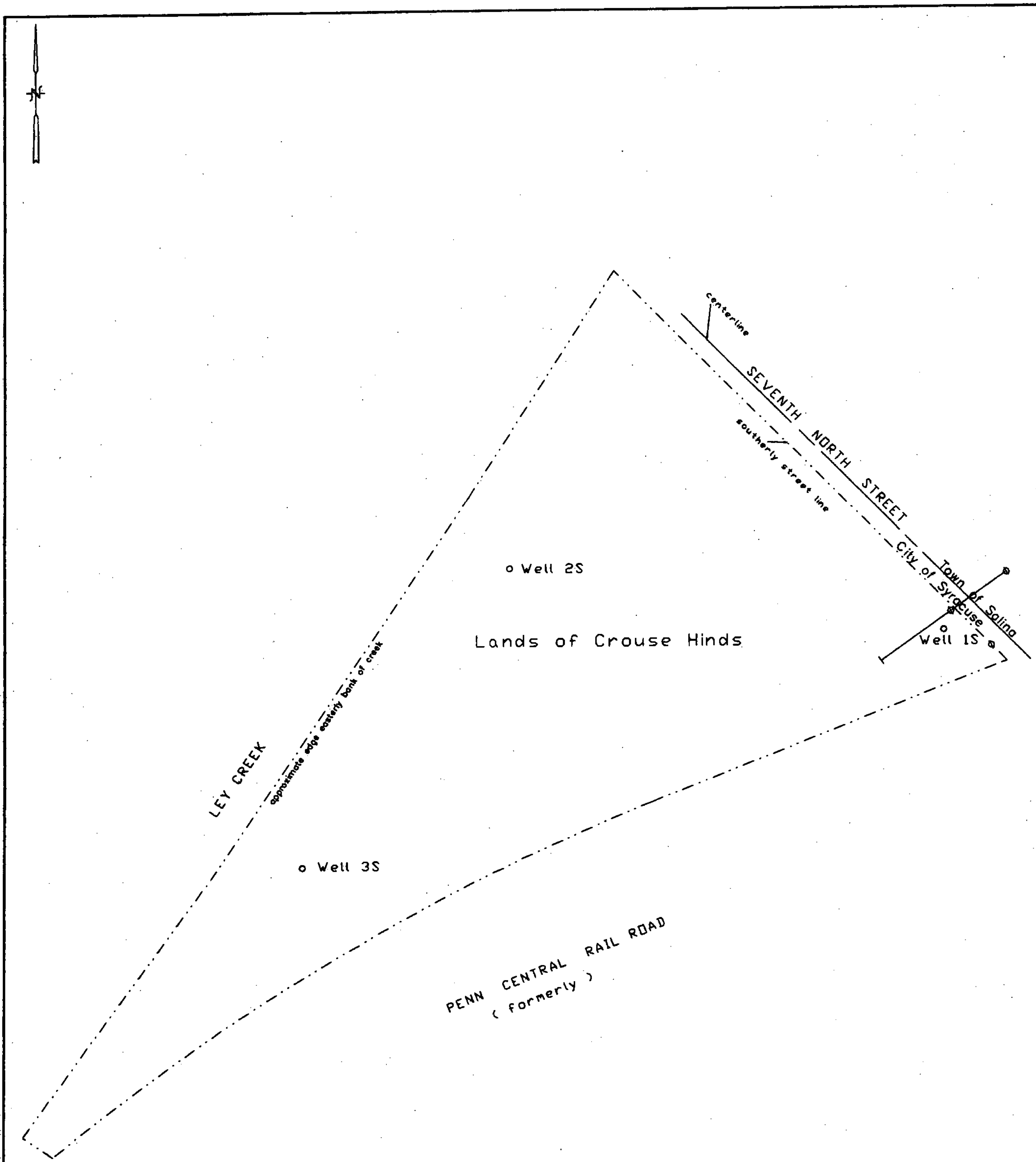
CAD FILE: fig1-2
DATE: 1/04
SCALE: 1"=200'

North Landfill Site Plan

Crouse-Hinds Facility
Syracuse, New York

PREPARED FOR: Cooper Industries, Inc.

FIGURE: 1-2



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DRAWN BY: MJS	South Landfill Site Plan
CAD FILE: fig1-3	Crouse-Hinds Facility Syracuse, New York
DATE: 1/04	
SCALE: 1"=200'	PREPARED FOR: Cooper Industries, Inc.
	FIGURE: 1-3

2.0 *SITE HISTORY AND PREVIOUS INVESTIGATIONS*

2.1 *SITE HISTORY*

Cooper Crouse-Hinds Division, a division of Cooper Industries, Inc. operates an electrical products manufacturing facility located on the corner of Wolf and Seventh North Streets, Salina, New York. This property includes two inactive landfills, the North and South Landfills, which comprise the Site. The North Landfill reportedly accepted an unknown quantity of solid industrial waste (i.e., foundry sand) from the Crouse-Hinds facility from mid-1950 through 1972. From 1972 through the early 1980's, this landfill was used for disposing approximately 85 cubic yards per day of non-putrescible solid wastes including foundry sand, floor sweepings, metal buffing and polishing residue, scrap lumber, plastic wastes and paint scrapings that were generated at the Crouse-Hinds facility. Zinc hydroxide sludge was also reportedly deposited in this landfill between 1972 and 1980. Between 1980 and 1983 approximately 40 cubic yards per day of industrial waste, from the Crouse-Hinds facility, including foundry sand and core butts were disposed of in the landfill. In April of 1981, Crouse-Hinds applied for a Part 360 permit to operate a non-hazardous landfill. On 10 March 1982, Crouse-Hinds withdrew the application. The north landfill has been inactive since the mid-1980's. The South Landfill reportedly accepted a combination of municipal solid waste from the City of Syracuse and industrial waste from the Crouse-Hinds facility consisting of foundry mold and core sand, scrap steel drums and shot, fly ash, paint scrapings, garbage and construction/demolition debris. Material placement in this landfill reportedly occurred between 1960 and 1969. Approximately 2,000 cubic yards per week of municipal solid waste from the City of Syracuse was reportedly accepted at the landfill between 1961 and 1964. The landfill has been inactive since 1969.

2.2 *PREVIOUS ASSESSMENTS AND INVESTIGATIONS*

According to available documentation, a number of site investigations were conducted at the Site in the early 1980's. During preparation of this PSA Work Plan, two reports documenting previous site investigations and/or evaluations were available for review. These investigations and their associated findings are discussed below.

2.2.1 *Phase I Report, Engineering Investigations and Evaluations at Inactive Hazardous Waste Sites, Crouse Hinds, Onondaga County, NY. Engineering-Science, Inc., June 1983.*

The New York State Department of Environmental Conservation (NYSDEC) retained Engineering-Science, Inc. (ESI) to conduct an engineering investigation and evaluation at the Site, which included calculation of a Hazard Ranking System (HRS) score and the estimation of costs of any potential remedial actions. ESI concluded in their report that there was insufficient information available to complete a final HRS score for the Site. Specifically, ESI indicated that additional target information for both air and groundwater would be required for generating a HRS score. Based on their evaluation, ESI recommended an air monitoring survey to determine air quality. No additional investigation pertaining to groundwater was recommended. Based on available information it was not clear whether any air quality monitoring was performed at the Site.

Support documentation contained in ESI's Phase I Report provided additional information regarding historic operations at the Site as well as additional historic investigations, sampling events and analytical results conducted by others. Specifically, these investigations included the installation of three groundwater monitoring wells in the North Landfill and several sampling events conducted in 1980 and 1981 as part of an application for landfill permitting. A review of the findings presented in these reports indicated that groundwater samples collected at the perimeter of the North Landfill detected cyanide, phenols, several volatile organic compounds (VOCs) (i.e., benzene, toluene, xylene and chloroform) and some metals (i.e., cadmium, chromium and zinc) in groundwater samples. Limited groundwater monitoring at the South Landfill detected the presence of cyanide in samples.

2.2.2 *Hydrogeologic Investigation, Crouse-Hinds Landfill, Syracuse, New York. Empire Soils Investigations, Inc. November 1983*

~~This report should be an appendix to WP.~~

In the early 1980's, Crouse-Hinds retained Empire Soils Investigations, Inc. (a.k.a. Thomsen Associates) to complete a hydrogeologic investigation specific to the North Landfill. The purpose of this investigation was to determine groundwater flow direction in each of two distinct aquifers beneath the landfill. These aquifers reportedly consisted of peat deposits located directly beneath the waste material and a sand and gravel unit located beneath the peat layer. A silt and clay unit ranging from 12 to 54 feet in thickness reportedly separates the two aquifers.

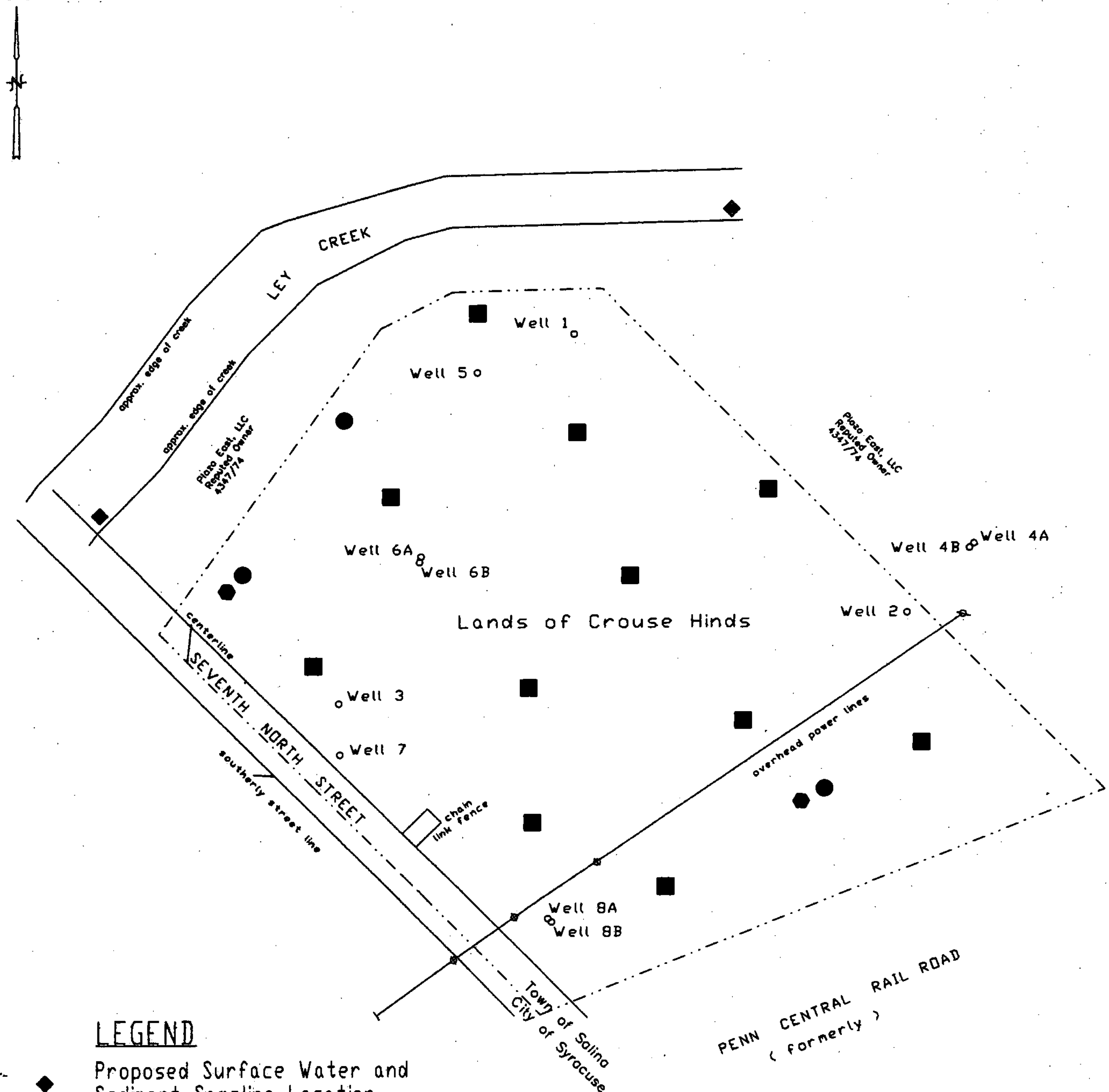
As part of the investigation, Thomsen Associates installed a total of 11 test borings, eight of which were completed as monitoring wells to supplement the existing monitoring well network (i.e., three wells installed by others). The monitoring wells included three locations installed in the shallow (i.e., peat) aquifer beneath the waste material and five locations installed in the deeper (i.e., sand and gravel) aquifer (Note: three of the deeper well locations were coincident with the shallow wells resulting in three nested pairs of wells). The three remaining soil borings were drilled west of the landfill; however, wells were not installed in these test borings.

According to Thomsen Associates report, the soils encountered beneath the landfill consisted of a peat layer ranging in thickness from 0.5 to 9 feet directly underlying the waste material. This peat layer is thicker to the west of the landfill ranging from 10.5 to 17 feet in thickness. A silt and clay unit underlies the peat layer and ranged in thickness from 12 to 54 feet with the thickest portion of the unit in the southwestern portion of the landfill. A medium to coarse sand with varying amounts of gravel underlies the silt and clay. The sand and gravel was described as at least 20 feet thick, the lower extent of which was not encountered during drilling activities.

In order to determine the groundwater flow direction in each aquifer as well as to identify any seasonal variation in flow direction, water level measurements were collected from each well, new and existing, on a monthly basis from December 1982 through October 1983. The results of the water level measurements indicated a general flow direction in the shallow aquifer to the west and southwest toward Ley Creek. The water level measurements also indicated a minor seasonal variation in the eastern portion of the landfill during the winter months. This variation consisted of an easterly to southeasterly component of flow in the eastern portion of the landfill. Water level measurements in the deeper aquifer indicated a more significant seasonal variation in the sand and gravel. During the summer months, the general groundwater flow direction is to the east and during the winter months, the general groundwater flow direction is to the west. Thomsen Associates also noted that the deeper aquifer is under artesian conditions for the majority of the year.

Based on their investigation, Thomsen Associates concluded that any leachate produced by the landfill should flow through the peat layer toward Ley Creek. They further concluded that the vertical migration of any leachate generated would be inhibited by the silt and clay unit as well as the artesian conditions in the sand and gravel unit. For these reasons, Thomsen Associates concluded that the effect of the landfill on water quality should be restricted to the groundwater in the organic deposits.

Thomsen Associates also recommended the installation of additional monitoring wells based on the seasonal variations observed in both shallow and deep aquifers. Specifically, Thomsen Associates recommended installing two new wells, one shallow well and one deep well, to further refine groundwater flow direction as well as for monitoring water quality. It does not appear that these wells were ever installed.



LEGEND

◆ Proposed Surface Water and Sediment Sampling Location

■ Proposed Test Pit Location

● Proposed Shallow Monitoring Well Location

⬣ Proposed Deep Monitoring Well Location

○ Existing Monitoring Well Location

Should be labeled

Note: Location of surface soil samples to be determined by visual site inspection.

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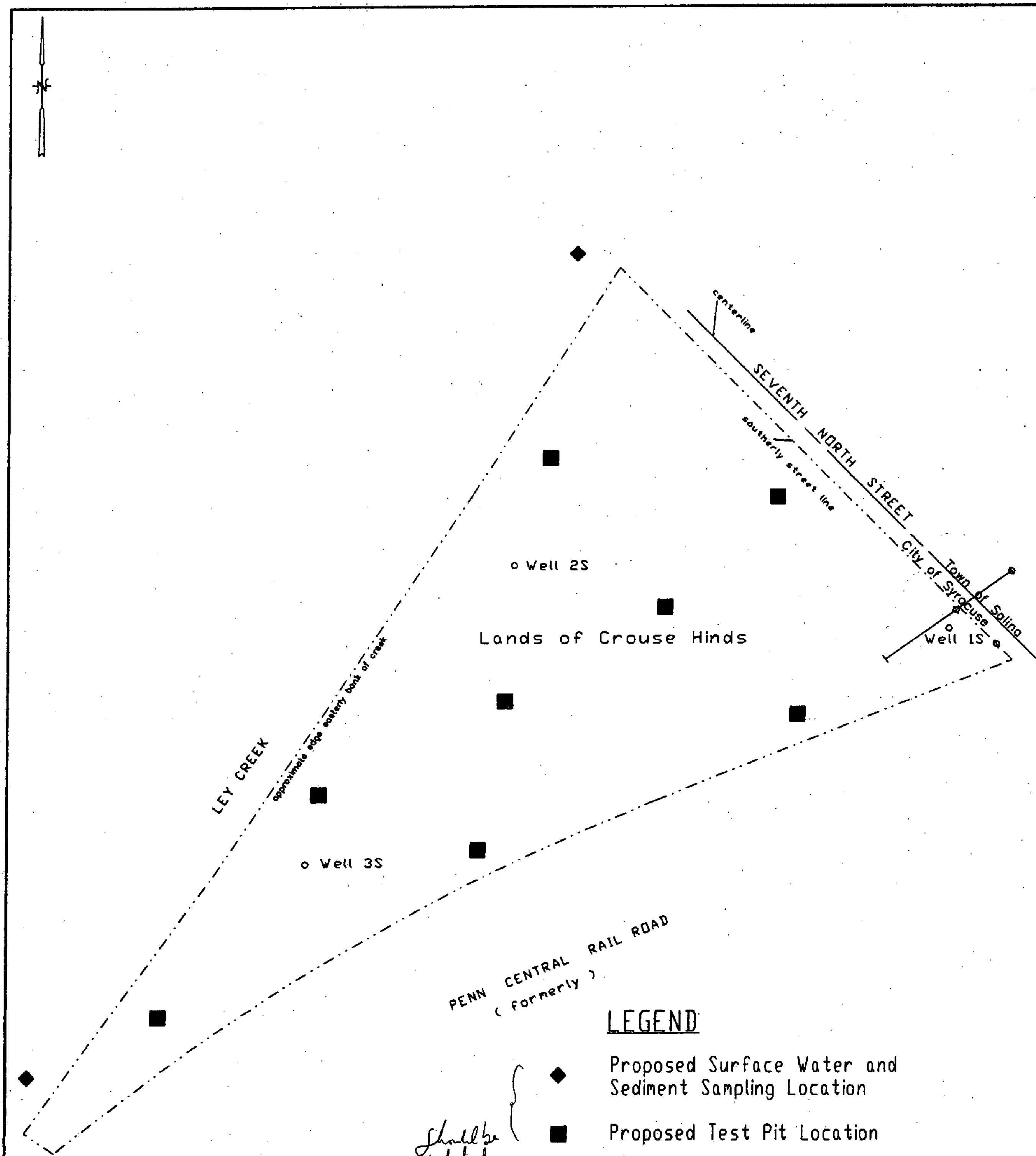
DATE	1/04
SCALE (approx.)	1"=200'

North Landfill Proposed Sample Location Map

Crouse-Hinds Facility
Syracuse, New York

PREPARED FOR: Cooper Industries, Inc.

FIGURE: 3-1



LEGEND

- ◆ Proposed Surface Water and Sediment Sampling Location
- ■ Proposed Test Pit Location
- ○ Existing Monitoring Well Location

Should be labeled

Note: Location of surface soil samples to be determined by visual site inspection.

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SCALE (approx.)	1"=200'

South Landfill Proposed Sample Location Map

Crouse-Hinds Facility
Syracuse, New York

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FIGURE: 3-2

3.0 PRELIMINARY SITE ASSESSMENT SCOPE OF WORK

This section describes the tasks that will be completed in areas of concern and across the Site as a whole during the PSA Site Investigation. Figures 3-1 and 3-2 are Proposed Sample Location Maps depicting the existing well locations as well as the approximate locations of the proposed borings/monitoring wells, surface water/sediment sampling points and test pits. It is important to note that the actual locations of these sampling points including the surface soil sampling locations will be field determined. The actual sampling points will be surveyed during the course of this investigation and will be identified on site maps in the PSA site investigation report.

Detailed specifications, field procedures and methodologies associated with the various tasks are presented in the attached Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP) (See Attachments 2 and 3, respectively). Health and safety protocols are described in the project Health and Safety Plan (HASP) provided as Attachment 4.

3.1 RECORDS REVIEW

A detailed records review will be conducted to evaluate previous work performed by Crouse-Hinds and others, as well as pertinent public information regarding the Site and surrounding properties. Existing environmental reports will be evaluated in detail and data / findings will be summarized and placed on updated site maps. Aerial photographs, historical topographic maps and other resources will also be assessed. This review will allow InteGreyted to utilize existing information so that a focused, cost-effective PSA can be conducted.

3.2 SOIL INVESTIGATION

3.2.1 Test Pit Excavation

A total of 19 test pits (8 on South Landfill and 11 on North Landfill) will be advanced in fill material existing at both landfills to document the nature of fill and underlying soil (Figures 3-1 and 3-2). The majority of the test pits will be advanced at the perimeter of the waste mass in each landfill; however, several test pits at each landfill will be advanced within the interior areas of each landfill. Test pits will be advanced to the base of the fill material provided that this can be accomplished safely and within the limits of the equipment. InteGreyted's on-site geologist will log all test pits in detail. Soil and fill material exposed at each test pit will be placed in a sealed container pending field screening. After a period of approximately 10 minutes the headspace of the sampling container will be scanned with a photonization detector (PID) to screen for the potential presence of VOCs. Selected samples (i.e., one per test pit for a total of 19 soil samples) will be containerized and submitted for laboratory analysis. Excavated material will be placed back into the excavation upon completion unless grossly contaminated. If materials are grossly contaminated they will be staged, and covered with plastic pending proper management. The limits of each test pit and the location of each soil sample will be marked with stakes to allow for surveying.

3.2.2 Test Pit Excavation Soil Sampling

Based on visual observations, odors and PID screening data, one soil sample per test pit (total 19) will be selected for laboratory analysis. Soil samples will be analyzed for VOCs (USEPA Method 8260), SVOCs (USEPA Method 8270), target analyte list (TAL) metals, cyanide and pesticides/PCBs (USEPA Method 8080) by a NYSDOH ELAP-certified laboratory that participates in the contract laboratory program (CLP). Laboratory analytical procedures will adhere to NYS ASP 2000 methodologies and protocols. Additionally, ten soil samples from interior will be collected and analyzed for RCRA waste characterization parameters by the Toxicity Characteristics Leaching Procedure (TCLP).

Analytical results will be reported using NYSDEC ASP 2000 Category B deliverables (with the exception of TCLP analyses). Site-specific quality assurance/quality control (QA/QC) samples, including matrix spike (MS)/matrix spike duplicate (MSD) samples and field duplicates will also be collected/analyzed, as appropriate. To the extent possible, dedicated sampling equipment will be used during sample collection such that equipment field blanks will not be required. Following receipt, the analytical data will be checked for completeness and accuracy; it will then be validated by a NYSDEC-approved data validation chemist and a Data Usability Summary Report (DUSR) will be prepared.

3.2.3 Surface Soil Sampling

InteGreyted will inspect the landfills to document the presence of drainage swales and to estimate if significant leachate releases and/or affected soil and sediment are present. Ten surface soil samples will be collected for laboratory analysis based on field observations and monitoring. A detailed log describing the location, nature, physical appearance, results of PID field screening, etc., will be prepared for each sample. The location of each surface soil sample will be marked with stakes to allow for surveying.

insufficient to support HHRA

Surface soil samples will be analyzed for VOCs (USEPA Method 8260), SVOCs (USEPA Method 8270), TAL metals, cyanide and pesticides/PCBs (USEPA Method 8080) by a NYSDOH ELAP-certified laboratory that participates in the CLP. Laboratory analytical procedures will adhere to NYS ASP 2000 methodologies and protocols.

Analytical results will be reported using NYSDEC ASP 2000 Category B deliverables. Site-specific QA/QC samples, including MS/MSD samples and field duplicates will also be collected/analyzed, as appropriate. Dedicated sampling equipment will be used during sample collection such that equipment field blanks will not be required. Following receipt, the analytical data will be checked for completeness and accuracy; it will then be validated by a NYSDEC-approved data validation chemist and a DUSR will be prepared.

3.3 HYDROGEOLOGIC INVESTIGATION

Groundwater monitoring performed at the perimeter of the North Landfill in 1983 reportedly detected cyanide, phenols, VOCs (i.e., benzene, toluene, xylene and chloroform) and some metals (i.e., cadmium, chromium and zinc) in groundwater samples. Limited groundwater monitoring at the South Landfill performed during the same time frame reportedly detected the presence of cyanide. Therefore, in order to characterize the groundwater system and to determine the potential for impacted groundwater at the Site, a site-wide hydrogeologic investigation will be conducted.

3.3.1 *Existing Monitoring Wells*

Based on the results of a well inspection and inventory conducted by Cooper, InteGreyted will utilize existing groundwater monitoring wells and install new wells to evaluate groundwater. It is our understanding that the following wells exist at the Site as follows:

North Landfill - Six shallow wells (20 feet deep or less) and five deep wells (up to 59 feet deep); which are shallow?

South Landfill - Three wells, construction details not available.

Existing wells will be repaired as needed, then carefully developed using low-flow techniques to remove sediment, increase communication with the screened water-bearing unit, and provide representative samples. This is a critical task, considering the age and dormancy of the existing wells. Well development water will be discharged on-site, unless there is visible evidence of impact. In the event that a sheen or free product is present, development water will be containerized pending proper management. The total depth of each well will also be determined.

- wells which are no longer usable should be replaced.

wells to be sampled

3.3.2 *Monitoring Well Installations*

Five new wells will be installed at the Site: two well nests (consisting of a 20-foot well and a 50-foot well), and one additional shallow well. The borings for the five new wells will be drilled using hollow stem auger (HSA) equipment and all wells will be constructed in accordance with NYSDEC protocol under the supervision of InteGreyted's on-site geologist. Each well will consist of ten feet of screened interval. Estimated monitoring well locations are shown on Figures 3-1 and 3-2.

During drilling activities, auger cuttings will be logged by a geologist and field screened with a PID to monitor for the potential presence of VOC vapors. Split-spoon soil samples will not be collected during well installation activities (unless extremely high PID readings are encountered).

Each of the monitoring wells will be constructed of two-inch-diameter PVC riser and ten feet of 0.01-inch slotted PVC well screen. The well screen in shallow wells will be installed to straddle the shallow water table. The well screen in the deep wells will be installed in the sand and gravel unit and the actual depth will be dependent on field observations during drilling.

A silica sand pack will be installed around the well screen in each well and will extend one to two feet above the top of the well screen. A one to two foot thick bentonite pellet seal will be placed above the sand pack and cement/bentonite grout will be utilized to backfill the remainder of the well annulus. The wells will be completed with a steel protective casing. Following installation, reference points will be marked on the top of the PVC at each well location to allow for surveying. All generated wastes (i.e., soil cuttings) will be staged on, and covered with, plastic sheeting pending proper management.

3.3.3 *Well Development*

Well development will begin no sooner than 24 hours after final completion of each monitoring well. Low-flow purging and development techniques will be used to develop each of the newly installed monitoring wells. Each well will be developed until the turbidity of the water is below 50 NTU, and/or field parameters (pH, conductivity, and temperature) stabilize. Development water from the wells will be checked periodically for the presence of a sheen or free product. Development water will be discharged directly to the ground surface, unless there is visible evidence of impact. In the event that a sheen or free product is present, development water will be containerized pending proper management.

not acceptable?

3.3.4 Groundwater Sampling

Groundwater sampling will be conducted no sooner than one week after final development of each of the existing and newly installed monitoring wells (total of 19 wells). Each monitoring well will be purged a minimum of three well volumes prior to sampling. Wells will be purged using either low-flow purging techniques or dedicated disposable bailers. Purge water will be discharged directly to the ground surface, unless there is visible evidence of impact. In the event that sheen or free product is present, purge water will be containerized pending proper management. not acceptable?

Following purging, groundwater samples will be collected from each well with a dedicated disposable polyethylene bailer and clean length of rope. Field parameters (pH, temperature, conductivity, dissolved oxygen, oxidation-reduction potential (ORP), and turbidity) and groundwater elevation data will be collected from each monitoring well prior to purging (water level measurement) and during sampling (field parameters). Groundwater elevation data will then be calculated and a groundwater flow map constructed for the sampling event.

Groundwater samples will be analyzed for VOCs (USEPA Method 8260), SVOCs (USEPA Method 8270), TAL metals, cyanide, pesticides/PCBs (USEPA Method 8080), and phenols by a NYSDOH ELAP-certified laboratory that participates in the CLP. Laboratory analytical procedures will adhere to NYS ASP 2000 methodologies and protocols.

Analytical results will be reported using NYSDEC ASP 2000 Category B deliverables. Site-specific QA/QC samples, including MS/MSDs, trip blanks (VOCs only) and field duplicates will also be collected/analyzed, as appropriate. Dedicated sampling equipment will be used during sample collection such that equipment field blanks will not be required. Following receipt, the analytical data will be checked for completeness and accuracy; it will then be validated by a NYSDEC-approved data validation chemist and a DUSR will be prepared.

3.4 LEY CREEK SAMPLING

To evaluate water and sediment quality in Ley Creek at locations proximal to the Site, InteGreyted will collect four surface water samples and four sediment samples from the creek. Sampling locations will be established at the north and south boundaries of each landfill (four locations total) based on field observations and availability of surface water and sediment for sample collection purposes. Once the locations have been established, a surface water sample will be collected at each location followed by sediment sample collection. Samples will be collected from the downstream locations first, then progressively upstream, to minimize cross-contamination. A description of each sample and sample location will be prepared, and each sample will be containerized for submittal to the laboratory. The location of each surface water/sediment sample will be marked with stakes to allow for surveying. 2 sample locations are immediately upstream & downstream of 7th North Street. Samples may be biased due to Road runoff.

Surface water and sediment samples will be analyzed for VOCs (USEPA Method 8260), SVOCs (USEPA Method 8270), TAL metals, cyanide and pesticides/PCBs (USEPA Method 8080). In addition, surface water samples will also be analyzed for phenols. Sample analysis will be performed by a NYSDOH ELAP-certified laboratory that participates in the CLP. Laboratory analytical procedures will adhere to NYS ASP 2000 methodologies and protocols.

Analytical results will be reported using NYSDEC ASP 2000 Category B deliverables. Site-specific QA/QC samples, including MS/MSDs, trip blanks (VOCs in surface water only) and field duplicates for both surface water and sediment samples will also be collected/analyzed, as appropriate. No equipment will be required for sample collection such that an equipment field blank will not be required. Following receipt, the surface water and sediment sample analytical data will be checked for completeness and accuracy; it will then be validated by a NYSDEC-approved data validation chemist and a DUSR will be prepared.

In addition to the sampling points, two gauging stations will be installed in Ley Creek as part of this task, one at the northern boundary of the North Landfill and one at the southern boundary of the South Landfill. These gauging stations will be surveyed as discussed in Section 3.6 below.

3.5 *STORM SEWER ASSESSMENT*

InteGreyted will attempt to locate the old storm sewer that was reportedly used in the past to discharge process water. If found, the storm sewer catch basins, outlet and any associated sample collection points will be surveyed as discussed in Section 3.6 below. Three sediment samples will be collected (if possible) as follows:

(1) Catch basin nearest Ley Creek,
(2) The end point of the discharge pipe, and
(3) In Ley Creek immediately downstream of the discharge point.

If collected, these sediment samples will be analyzed for VOCs (USEPA Method 8260), SVOCs (USEPA Method 8270), TAL metals, cyanide and pesticides/PCBs (USEPA Method 8080) by a NYSDOH ELAP-certified laboratory that participates in the CLP. Laboratory analytical procedures will adhere to NYS ASP 2000 methodologies and protocols.

Analytical results will be reported using NYSDEC ASP 2000 Category B deliverables. Site-specific QA/QC samples, including MS/MSDs and field duplicates will also be collected/analyzed, as appropriate. Dedicated sampling equipment will be used during sample collection such that equipment field blanks will not be required. Following receipt, the analytical data will be checked for completeness and accuracy; it will then be validated by a NYSDEC-approved data validation chemist and a DUSR will be prepared.

3.6 *SURVEYING*

Upon completion of all field tasks, the horizontal and vertical locations of all soil borings and monitoring wells will be surveyed by a New York State (NYS) licensed land surveyor. Vertical elevations will be recorded to the nearest 0.01-foot. Top-of-PVC casing elevations for each monitoring well will also be recorded to the nearest 0.01-foot to establish water table elevations and groundwater flow direction. In addition, all other sampling points (i.e., surface water, surface soil, sediment, catch basins, etc.) will be surveyed and referenced to an onsite fixed datum point.

3.7 DATA EVALUATION

3.7.1 Soil Sampling Data

Upon receipt, the analytical data packages will be reviewed for completeness and accuracy. The data will then be validated, and a DUSR will be prepared. Following validation the data will be compared to NYSDEC TAGM 4046 recommended soil cleanup objectives. Results of this evaluation will be presented in the PSA Report discussed in Section 6.0.

3.7.2 Groundwater Sampling Data

Upon receipt, the analytical data packages will be reviewed for completeness and accuracy. The data will then be validated, and a DUSR will be prepared. Following validation the data will be compared to NYSDEC Division of Water Technical and Operational Guidance Series 1.1.1 (TOGS) ambient water quality standards and guidance values for groundwater. These values are derived from 6 NYCRR Parts 700-705, Water Quality Regulations. Groundwater elevation and flow data will also be reviewed and evaluated. Results of this evaluation will be presented in the PSA Report discussed in Section 6.0.

4.0 *FISH AND WILDLIFE*

Step 1 of NYSDECs Fish and Wildlife Impact Analysis (FWIA) will be performed (NYSDEC, 1994). The objectives of the FWIA – Step 1 are to identify fish and wildlife resources that presently exist and that existed before contaminant introduction and to provide information necessary for the design of a remedial investigation, if justified. Possible pathways of contaminant migration affecting fish and wildlife resources are identified through tasks performed for Step-1, as follows:

- Creation of site topographic, cover-type and drainage maps clearly identifying the specific features (i.e., site location and perimeter, fish and wildlife resources, wetlands, aquatic habitats, NYSDEC significant habitats, etc.) described in the guidance,
- Description of the fish and wildlife resources, including the expected fauna and vegetative cover-types as well as any areas of observed stress in the study area,
- Description of the fish and wildlife resources value including the value of the habitat to associated fauna and the value of these resources to humans, and
- Identification of applicable fish and wildlife regulatory criteria.

Based on the results of Step 1 of the FWIA and other investigative activities conducted as part of the PSA, the need for additional FWIA steps will be evaluated in accordance with the criteria set forth in the guidance. If an ecological risk assessment (ERA) is deemed necessary, it will be performed in accordance with the ERA guidance developed by the NYSDEC and the USEPA for Onondaga Lake Subsites (NYSDEC, 1998). This guidance includes a combination of NYSDEC's FWIA guidance and USEPA's Ecological Risk Assessment Guidance for Superfund (USEPA, 1997).

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5.0 HEALTH AND SAFETY

All project work will be performed in accordance with the site-specific Health and Safety Plan (HASP) provided as Attachment 4.

6.0 REPORTING

A PSA Report, which includes appropriate support documentation (tables, maps, laboratory data reports, data validation reports, etc.), field data, and analytical data summaries will be prepared at the completion of field activities. The report will present findings, conclusions, and recommendations for additional work and/or remediation, if necessary, as required by the PSA Administrative Consent Order with NYSDEC.

Monthly reports will be prepared and submitted to NYSDEC on the Friday of the first full week of each month, commencing with the month subsequent to the approval of the Investigation Work Plan and ending with the termination date. The reports will be prepared in accordance with the requirements of the PSA Administrative Consent Order with NYSDEC. The monthly reports will include, at a minimum, the following information.

- Activities conducted during the reporting period;
- Anticipated activities for the next reporting period;
- Activity modifications;
- Sampling results;
- Project percentage completion;
- Corrective actions; and
- Citizen participation activities.

7.0 SCHEDULE

Summarized below is a tentative schedule for completion of project milestones.

Task	Completion Date
Submission of PSA Work Plan to NYSDEC:	16 January 2004
NYSDEC Provides PSA Work Plan Comments to Cooper:	20 February 2004
Cooper Provides Response to NYSDEC Comments:	5 March 2004
Submission of Final PSA Work Plan to NYSDEC:	5 March 2004
NYSDEC Work Plan Approval / Work Authorized	26 March 2004
Begin Fieldwork:	5 April 2004
Finish Fieldwork:	30 April 2004
Receive Data from CLP Laboratory:	21 May 2004
Complete Data Validation:	11 June 2004
Submit PSA Report to NYSDEC:	9 July 2004
NYSDEC Provides PSA Report Comments to Cooper:	30 July 2004
Cooper Provides Response to NYSDEC Comments:	13 August 2004
Final PSA Report Provided to NYSDEC:	27 August 2004

This schedule is estimated, and NYSDEC review durations are assumed.

ATTACHMENT 1

SUPPORT DOCUMENTATION

PHASE I REPORT

ENGINEERING INVESTIGATIONS AND EVALUATIONS AT INACTIVE HAZARDOUS WASTE DISPOSAL SITES

Crouse Hinds
Onondaga County, NY

SUBMITTED TO

New York State Department of Environmental Conservation

SUBMITTED BY

ENGINEERING-SCIENCE, INC.
in association with
DAMES & MOORE

JUNE 1983

TABLE OF CONTENTS

SITE IDENTIFICATION

USEPA #NYD980641526

NYSDEC #734004

SECTION I

EXECUTIVE SUMMARY

Crouse-Hinds

Objective

The purpose of this two phase program is to conduct engineering investigations and evaluations at inactive hazardous waste disposal sites in New York State in order to calculate a Hazard Ranking System (HRS) score for each site and estimate the cost of any recommended remedial action. During the initial portion of this investigation (Phase I) all available data and records combined with information collected from a site inspection were reviewed and evaluated to determine the adequacy of existing information for calculating an HRS score. On the basis of this evaluation, a Phase II Work Plan was prepared for collecting additional HRS data (if necessary), evaluating remedial alternatives and preparing a cost estimate for recommended remedial action. The results of the Phase I study for this site are summarized below and detailed in the body of the report.

Site Background

The site consists of two adjacent landfills in the Town of Salina, Onondaga County, New York. The sites are located a short distance to the north west of Crouse-Hinds Wolf and Seventh North Street Manufacturing facility. The South landfill consists of 15 acres and has been inactive since 1969. It was used to dispose of both industrial and municipal wastes. The North landfill is still active and has been predominately used for industrial wastes. The surrounding area consists primarily of wet lands which have been extensively used as landfills. Extensive monitoring of the North Landfill has determined that phenols, cyanides, benzene, toluene and xylene are leaching into the groundwater. Monitoring at the South landfill has detected low levels of cyanides.

Assessment

Insufficient information is available to complete a final HRS scoring. The preliminary HRS scoring for this site was:

S_M=10.51 S_A=0

S_{GW}=0 S_{FE}=0

S_{SW}=18.18 S_{DC}=0

The surface water route scored high on this site due to the large target scoring. Additional target information is required for the groundwater route. Sufficient ground and surface water data is available for scoring, however an air sample is required.

Recommendations

The following recommendations are made for the completion of Phase II:

- air monitoring survey to determine air quality

The estimated manhour requirements for Phase II are 193, while the estimated cost is $7,916.

SECTION II

SITE DESCRIPTION

Crouse-Hinds

This site consists of two adjacent landfills in the town of Salina, Onondaga County, New York. The sites are located a short distance to the northwest of Crouse-Hind's Wolf and Seventh North Street electrical products manufacturing facilities in Syracuse, and is separated from them by a Conrail right-of-way. The surrounding area is zoned for industrial use but consists primarily of wetlands which have been extensively utilized as landfills.

The South landfill covers approximately 15 acres of land and has been inactive since 1969. The North landfill consisting of 21 acres is currently active. Extensive groundwater monitoring of the landfills have determined the presence of organic (phenols, benzene, toluene) and inorganic (cadmium, cyanide, chromium) containments in the North landfill area.

SCALE
0 1000 2000 3000 4000 FEET

SITE LOCATION MAP
CROUSE HINDS

REFERENCE: U.S.G.S. 7.5' TOPOGRAPHIC MAP.
SYRACUSE WEST, NY (1978) QUADRANGLE

SECTION III

HRS SCORING

HRS COVER SHEET

Facility name: Crouse-Hinds

Location: 7th North St., Syracuse, NY

EPA Region: II

Person(s) in charge of the facility: Mr. Patrick Vassallo

VP Manufacturing

Crouse-Hinds, Syracuse, NY

Name of Reviewer: ~~John Kubarewicz/Eileen Gillian~~ Date: May 19, 1983

General description of the facility:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Industrial landfill surrounded by municipal landfills. Preliminary finding indicate possible presence of phenols, benzene, toluene, and chloroform in groundwater.

Scores: $S_M = 10.51$ ($S_{gw} = 0$ $S_{sw} = 18.18$ $S_a = 0$)

$S_{FE} = 0$

$S_{DC} = 0$

GROUND WATER ROUTE WORK SHEET

Ground Water Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1 Observed Release	0 45	1	45	45	3.1
If observed release is given a score of 45, proceed to line 4. If observed release is given a score of 0, proceed to line 2.					
2 Route Characteristics					3.2
Depth to Aquifer of Concern	0 1 2 3	2		6	
Net Precipitation	0 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 3	1		3	
Physical State	0 1 2 3	1		3	
	Total Route Characteristics Score			15	
3 Containment	0 1 2 3	1		3	3.3
4 Waste Characteristics					3.4
Toxicity/Persistence	0 3 6 9 12 15 18	1	18	18	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	8	8	
	Total Waste Characteristics Score		26	26	
5 Targets					3.5
Ground Water Use	0 1 2 3	3	0	9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	1	0	40	
	Total Targets Score		0	49	
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5			0	57,330	
7 Divide line 6 by 57,330 and multiply by 100			S_{gw} = 0.00		

AIR ROUTE WORK SHEET

Air Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Observed Release	0 45	1	0	45	5.1
Date and Location:					
Sampling Protocol:					
If line 1 is 0, the S_a = 0. Enter on line 5. If line 1 is 45, then proceed to line 2.					
2 Waste Characteristics					5.2
Reactivity and Incompatibility	0 1 2 3	1		3	
Toxicity	0 1 2 3	3		9	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	
	Total Waste Characteristics Score			20	
3 Targets					5.3
Population Within 4-Mile Radius	0 9 12 15 18 21 24 27 30	1		30	
Distance to Sensitive Environment	0 1 2 3	2		6	
Land Use	0 1 2 3	1		3	
	Total Targets Score			39	
4 Multiply 1 x 2 x 3				35,100	
5 Divide line 4 by 35,100 and multiply by 100			S_a = 0		

Fire and Explosion Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1 Containment	1 3	1		3	7.1
2 Waste Characteristics					7.2
Direct Evidence	0 3	1		3	
Ignitability	0 1 2 3	1		3	
Reactivity	0 1 2 3	1		3	
Incompatibility	0 1 2 3	1		3	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	
Total Waste Characteristics Score				20	
3 Targets					7.3
Distance to Nearest Population	0 1 2 3 4 5	1		5	
Distance to Nearest Building	0 1 2 3	1	-	3	
Distance to Sensitive Environment	0 1 2 3	1		3	
Land Use	0 1 2 3	1		3	
Population Within 2-Mile Radius	0 1 2 3 4 5	1		5	
Buildings Within 2-Mile Radius	0 1 2 3 4 5	1		5	
Total Targets Score				24	
4 Multiply 1 x 2 x 3				1,440	
5 Divide line 4 by 1,440 and multiply by 100			S_{FE} = 0		

June 28, 1982

DOCUMENTATION RECORDS
FOR
HAZARD RANKING SYSTEM

INSTRUCTIONS: The purpose of these records is to provide a convenient way to prepare an auditable record of the data and documentation used to apply the Hazard Ranking System to a given facility. As briefly as possible summarize the information you used to assign the score for each factor (e.g., "Waste quantity = 4,230 drums plus 800 cubic yards of sludges"). The source of information should be provided for each entry and should be a bibliographic-type reference that will make the document used for a given data point easier to find. Include the location of the document and consider appending a copy of the relevant page(s) for ease in review.

FACILITY NAME: CROUSE-HINDS

LOCATION: SYRACUSE, NY

Net Precipitation

Mean annual or seasonal precipitation (list months for seasonal):

40

Mean annual lake or seasonal evaporation (list months for seasonal):

27

Net precipitation (subtract the above figures):

13

Permeability of Unsaturated Zone

Soil type in unsaturated zone:

Permeability associated with soil type:

Physical State

Physical state of substances at time of disposal (or at present time for generated gases):

SOLID + LIQUID + SLUDGE

* * *

5 TARGETS

Ground Water Use

Use(s) of aquifer(s) of concern within a 3-mile radius of the facility:

UNKNOWN

Distance to Nearest Well

Location of nearest well drawing from aquifer of concern or occupied building not served by a public water supply:

N/A

Distance to above well or building:

N/A

Population Served by Ground Water Wells Within a 3-Mile Radius

Identified water-supply well(s) drawing from aquifer(s) of concern within a 3-mile radius and populations served by each:

0

Computation of land area irrigated by supply well(s) drawing from aquifer(s) of concern within a 3-mile radius, and conversion to population (1.5 people per acre):

0

Total population served by ground water within a 3-mile radius:

0

Is the facility completely surrounded by areas of higher elevation?

NO

1-Year 24-Hour Rainfall in Inches

2.2

Distance to Nearest Downslope Surface Water

0.11

Physical State of Waste

LIQUID

* * *

3 CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

UNCONTAINED

Method with highest score:

Is there tidal influence?

NO

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

N/A

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

0.1

Distance to critical habitat of an endangered species or national wildlife refuge, if 1 mile or less:

UNKNOWN

Population Served by Surface Water

Location(s) of water-supply intake(s) within 3 miles (free-flowing bodies) or 1 mile (static water bodies) downstream of the hazardous substance and population served by each intake:

NONE

AIR ROUTE

1 OBSERVED RELEASE

Contaminants detected:

NONE DETECTED

Date and location of detection of contaminants

N/A

Methods used to detect the contaminants:

N/A

Rationale for attributing the contaminants to the site:

N/A

* * *

2 WASTE CHARACTERISTICS

<u>Reactivity and Incompatibility</u>

Most reactive compound:

N/A

Most incompatible pair of compounds:

N/A

Distance to critical habitat of an endangered species, if 1 mile or less:

UNKNOWN

Land Use

Distance to commercial/industrial area, if 1 mile or less:

0

Distance to national or state park, forest, or wildlife reserve, if 2 miles or less:

3.5

Distance to residential area, if 2 miles or less:

UNKNOWN

Distance to agricultural land in production within past 5 years, if 1 mile or less:

N/A

Distance to prime agricultural land in production within past 5 years, if 2 miles or less:

N/A

Is a historic or landmark site (National Register of Historic Places and National Natural Landmarks) within the view of the site?

N/A

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION

01 STATE: NY | 02 SITE NUMBER: D980641526

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site): CROUSE HINDS

02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER: NORTH + SOUTH LANDFILL SITES

03 CITY: SYRACUSE

04 STATE: NY | 05 ZIP CODE: 13221 | 06 COUNTY: ONONDAGA | 07 COUNTY CODE: 67 | 08 CONG DIST: -

09 COORDINATES: LATITUDE 43° 04' 58.1" | LONGITUDE 76° 10' 13.0"

10 TYPE OF OWNERSHIP (Check one): ☒ A. PRIVATE ☐ B. FEDERAL ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL ☐ F. OTHER ☐ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION: 4 26 83 (MONTH DAY YEAR)

02 SITE STATUS: ☒ ACTIVE ☐ INACTIVE

03 YEARS OF OPERATION: 1950'S (BEGINNING YEAR) PRESENT (ENDING YEAR) ☐ UNKNOWN — NORTH 1950- / SOUTH 1960-1969

04 AGENCY PERFORMING INSPECTION (Check all that apply): ☐ A. EPA ☐ B. EPA CONTRACTOR ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR ☐ E. STATE ☒ F. STATE CONTRACTOR ES D+M (Name of firm) ☐ G. OTHER (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
John Kubarewicz	PROJ ENGINEER	ES	(703) 591-7575

09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
ART SEANOR	GEOLOGIST	D+M	(315) 638-2572
			( )
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO.
TIM STONE	FACILITY MANAGER	CROUSE-HINDS SYRACUSE	(315) 477-5373
DAVE RANKAINEN	FACILITY ENGINEER	" "	(315) 477-5373
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one): ☒ PERMISSION ☐ WARRANT

18 TIME OF INSPECTION: 14:30

19 WEATHER CONDITIONS: CLEAR SUNNY

IV. INFORMATION AVAILABLE FROM

01 CONTACT: John Kubarewicz | 02 OF (Agency/Organization): ES | 03 TELEPHONE NO.: (703) 591-7575

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM: SAME | 05 AGENCY: | 06 ORGANIZATION: | 07 TELEPHONE NO.: | 08 DATE: 5 6 83 (MONTH DAY YEAR)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE | 02 SITE NUMBER
NY | D980641526

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☑ A. GROUNDWATER CONTAMINATION 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

GROUND WATER SAMPLES TAKEN ON NORTH LAND FILL SITE SHOW LOW LEVELS OF PHENOLS (.013-.065 PPM), CYANIDES ALSO LOW .009-.021 PPM

01 ☑ B. SURFACE WATER CONTAMINATION 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

SAMPLES IN LEY CREEK ADJACENT TO NORTH LANDFILL HAVE LOW CONCENTRATIONS OF CYANDES, ZINC, CHROMIUM

01 ☐ C. CONTAMINATION OF AIR 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

NONE APPARENT

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

N/A

01 ☐ E. DIRECT CONTACT 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

LANDFILL WORKERS

01 ☐ F. CONTAMINATION OF SOIL 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: ________ (Acres) 04 NARRATIVE DESCRIPTION

NOT TESTED

01 ☐ G. DRINKING WATER CONTAMINATION 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

N/A

01 ☐ H. WORKER EXPOSURE/INJURY 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

N/A

01 ☐ I. POPULATION EXPOSURE/INJURY 02 ☐ OBSERVED (DATE: ________) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ________ 04 NARRATIVE DESCRIPTION

UNKNOWN

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE: NY | 02 SITE NUMBER: 0980641526

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
☐ A. NPDES				
☐ B. UIC				
☐ C. AIR				
☐ D. RCRA				
☐ E. RCRA INTERIM STATUS				
☐ F. SPCC PLAN				
☐ G. STATE (Specify) 360	APPLIED	—	—	APPLIED FOR PERMIT 4/80
☐ H. LOCAL (Specify)				WITHDREW APPLICATION
☐ I. OTHER (Specify)				3/10/82
☐ J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☐ A. SURFACE IMPOUNDMENT		
☐ B. PILES		
☐ C. DRUMS, ABOVE GROUND		
☐ D. TANK, ABOVE GROUND		
☐ E. TANK, BELOW GROUND		
☒ F. LANDFILL	UNKNOWN	
☐ G. LANDFARM		
☐ H. OPEN DUMP		
☐ I. OTHER (Specify)		

04 TREATMENT (Check all that apply)

☐ A. INCENERATION
☐ B. UNDERGROUND INJECTION
☐ C. CHEMICAL/PHYSICAL
☐ D. BIOLOGICAL
☐ E. WASTE OIL PROCESSING
☐ F. SOLVENT RECOVERY
☐ G. OTHER RECYCLING/RECOVERY
☐ H. OTHER (Specify) NONE

05 OTHER

☐ A. BUILDINGS ON SITE

06 AREA OF SITE

15-S (Acres)
22-N

07 COMMENTS

TWO SITES, NORTH SITE IS AN ACTIVE LANDFILL SOUTH SITE IS CLOSED (USED FOR BOTH INDUSTRIAL AND MUNICIPAL)

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

☐ A. ADEQUATE, SECURE ☒ B. MODERATE ☐ C. INADEQUATE, POOR ☐ D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.

LANDFILL

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: ☒ YES ☐ NO

02 COMMENTS FENCE GATE TO BLOCK VEHICLE ENTRY, OTHERWISE OPEN SECURITY CHECKS PERIODICALLY

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

SITE INSPECTION

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION
01 STATE: NY 02 SITE NUMBER: D980641526

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

☐ A. $10^{-6} - 10^{-8}$ cm/sec ☐ B. $10^{-4} - 10^{-6}$ cm/sec ☑ C. $10^{-4} - 10^{-3}$ cm/sec ☐ D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

☐ A. IMPERMEABLE (Less than 10^{-6} cm/sec) ☐ B. RELATIVELY IMPERMEABLE ($10^{-4} - 10^{-6}$ cm/sec) ☑ C. RELATIVELY PERMEABLE ($10^{-2} - 10^{-4}$ cm/sec) ☐ D. VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH
780 (ft)	0 (ft)	

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
8 (in)	2.2 (in)	2.1 %	SE	2.5 %

09 FLOOD POTENTIAL: SITE IS IN 100 YEAR FLOODPLAIN

10 ☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE A. ______ (mi) OTHER B. 0.1 (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species) 0.1 (mi)

ENDANGERED SPECIES: PEREGRINE FALCON GOLDEN EAGLE

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AG LAND
A. 0 (mi)	B. 3.5 (mi) (ONONDAGA PARK)	C. ______ (mi)	D. ______ (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

SITE IS ON GENERALLY FLAT AREA ADJACENT AND SOUTH OF LEY CREEK (ON FLOOD PLAIN)

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

USGS

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D980641526

II. CURRENT OWNER(S)

01 NAME	02 D+B NUMBER	08 NAME (PARENT COMPANY)	09 D+B NUMBER
CROUSE-HINDS		COOPER INDUSTRIES	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE
WOLF ST		FIRST CITY TOWER	

05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE
SYRACUSE	NY	13221	HOUSTON	TX	77210

01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	**04 SIC CODE**	**10 STREET ADDRESS (P.O. Box, RFD #, etc.)**	**11 SIC CODE**
05 CITY / 06 STATE / 07 ZIP CODE		**12 CITY / 13 STATE / 14 ZIP CODE**	

01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	**04 SIC CODE**	**10 STREET ADDRESS (P.O. Box, RFD #, etc.)**	**11 SIC CODE**
05 CITY / 06 STATE / 07 ZIP CODE		**12 CITY / 13 STATE / 14 ZIP CODE**	

01 NAME	02 D+B NUMBER	08 NAME	09 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	**04 SIC CODE**	**10 STREET ADDRESS (P.O. Box, RFD #, etc.)**	**11 SIC CODE**
05 CITY / 06 STATE / 07 ZIP CODE		**12 CITY / 13 STATE / 14 ZIP CODE**	

III. PREVIOUS OWNER(S) (List most recent first)

IV. REALTY OWNER(S) (If applicable; list most recent first)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	**04 SIC CODE**	**03 STREET ADDRESS (P.O. Box, RFD #, etc.)**	**04 SIC CODE**
05 CITY / 06 STATE / 07 ZIP CODE		**05 CITY / 06 STATE / 07 ZIP CODE**	

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	**04 SIC CODE**	**03 STREET ADDRESS (P.O. Box, RFD #, etc.)**	**04 SIC CODE**
05 CITY / 06 STATE / 07 ZIP CODE		**05 CITY / 06 STATE / 07 ZIP CODE**	

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	**04 SIC CODE**	**03 STREET ADDRESS (P.O. Box, RFD #, etc.)**	**04 SIC CODE**
05 CITY / 06 STATE / 07 ZIP CODE		**05 CITY / 06 STATE / 07 ZIP CODE**	

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

NYS Tax Records

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: 0980611526

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER
SAME	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
CITY SYRACUSE			
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	**04 SIC CODE**	**03 STREET ADDRESS (P.O. Box, RFD #, etc.)**	**04 SIC CODE**
05 CITY / 06 STATE / 07 ZIP CODE		**05 CITY / 06 STATE / 07 ZIP CODE**	
SYRACUSE / NY /			
01 NAME	**02 D+B NUMBER**	**01 NAME**	**02 D+B NUMBER**
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	**04 SIC CODE**	**03 STREET ADDRESS (P.O. Box, RFD #, etc.)**	**04 SIC CODE**
05 CITY / 06 STATE / 07 ZIP CODE		**05 CITY / 06 STATE / 07 ZIP CODE**	

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	**04 SIC CODE**	**03 STREET ADDRESS (P.O. Box, RFD #, etc.)**	**04 SIC CODE**
05 CITY / 06 STATE / 07 ZIP CODE		**05 CITY / 06 STATE / 07 ZIP CODE**	
01 NAME	**02 D+B NUMBER**	**01 NAME**	**02 D+B NUMBER**
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	**04 SIC CODE**	**03 STREET ADDRESS (P.O. Box, RFD #, etc.)**	**04 SIC CODE**
05 CITY / 06 STATE / 07 ZIP CODE		**05 CITY / 06 STATE / 07 ZIP CODE**	

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	D980641526

II PAST RESPONSE ACTIVITIES (Continued)

01 ☐ R. BARRIER WALLS CONSTRUCTED — 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
NO

01 ☐ S. CAPPING/COVERING — 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
NO

01 ☐ T. BULK TANKAGE REPAIRED — 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
NO

01 ☐ U. GROUT CURTAIN CONSTRUCTED — 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
NO

01 ☐ V. BOTTOM SEALED — 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
NO

01 ☐ W. GAS CONTROL — 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
NO

01 ☐ X. FIRE CONTROL — 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
NO

01 ☐ Y. LEACHATE TREATMENT — 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
NO

01 ☐ Z. AREA EVACUATED — 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
NO

01 ☐ 1. ACCESS TO SITE RESTRICTED — 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
PRIVATE PROPERTY

01 ☐ 2. POPULATION RELOCATED — 02 DATE ______ 03 AGENCY ______
04 DESCRIPTION
NO

01 ☑ 3. OTHER REMEDIAL ACTIVITIES — 02 DATE 1981 03 AGENCY ______
04 DESCRIPTION
1981 THREE GROUND WATER WELLS INSTALLED 6 SETS OF ANALYSIS OF WATER AND SOIL. (SOUTH LANDFILL)

1983 - NORTH LANDFILL - STUDIES UNDERWAY FOR LEACHATE EVALUATION

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

SAME AS PART 3

EPA

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: D980641526

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site): CROUSE-HINDS COMPANY	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER: WOLF + 7 NORTH ST
03 CITY: SYRACUSE	04 STATE: NY; 05 ZIP CODE: 13221; 06 COUNTY: ONONDAGA; 07 COUNTY CODE: 67; 08 CONG DIST: –
09 COORDINATES LATITUDE: 43°04'52.1"	LONGITUDE: 76°10'13.0"

10 DIRECTIONS TO SITE (Starting from nearest public road): SOUTH OF NEW YORK THRU WAY OFF 7TH NORTH STREET

III. RESPONSIBLE PARTIES

01 OWNER (if known): COOPER-INDUSTRIES	02 STREET (Business, mailing, residential): FIRST CITY TOWER, SUITE 4000
03 CITY: HOUSTON	04 STATE: TX; 05 ZIP CODE: ; 06 TELEPHONE NUMBER: (713) 739-3402
07 OPERATOR (if known and different from owner): CROUSE-HINDS Com	08 STREET (Business, mailing, residential): WOLF ST
09 CITY: SYRACUSE	10 STATE: NY; 11 ZIP CODE: 13221; 12 TELEPHONE NUMBER: (315) 477-593

13 TYPE OF OWNERSHIP (Check one)
☑ A. PRIVATE ☐ B. FEDERAL: ______ (Agency name) ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL
☐ F. OTHER: ______ (Specify) ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)
☐ A. RCRA 3001 DATE RECEIVED: / / (MONTH DAY YEAR) ☐ B. UNCONTROLLED WASTE SITE (CERCLA 103 c) DATE RECEIVED: / / (MONTH DAY YEAR) ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION
☑ YES DATE: 4 26 83 (MONTH DAY YEAR)
☐ NO

BY (Check all that apply)
☐ A. EPA ☐ B. EPA CONTRACTOR ☒ C. STATE ☐ D. OTHER CONTRACTOR
☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER: ______ (Specify)

CONTRACTOR NAME(S): Engineering-Science, Dames + Moore

02 SITE STATUS (Check one)
☑ A. ACTIVE ☑ B. INACTIVE ☐ C. UNKNOWN

03 YEARS OF OPERATION
1950S — (BEGINNING YEAR – ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED
PHENOLS CHROMIUM BENZENE
CYANIDES ZINC TOLUENE
CADMIUM CHLOROFORM

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION
POSSIBLE LEACHING OF MATERIALS INTO LEY CREEK GROUND WATER AND WATER SAMPLING INDICATE LOW LEVELS

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)
☐ A. HIGH (Inspection required promptly) ☐ B. MEDIUM (Inspection required) ☑ C. LOW (Inspect on time available basis) ☐ D. NONE (No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)		03 TELEPHONE NUMBER
John Kubarewicz	ES		(703) 591-7575
04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION / 07 TELEPHONE NUMBER ( )	08 DATE: 5 18 93 (MONTH DAY YEAR)

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	D980641526

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

NONE APPARENT

01 ☐ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION (Include name(s) of species)

NONE APPARENT

01 ☑ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

IN SURFACE WATER BODIES

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES (Spills/runoff/standing liquids/leaking drums) — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ______ 04 NARRATIVE DESCRIPTION

NONE OBSERVED

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

NONE OBSERVED

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

N/A

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: ______) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

N/A

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: ______

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

CALOCERINOS + SPINA, 10/81, ENGINEERING REPORT AND PLAN OF OPERATION ACCOMPANYING APPLICATION FOR PERMIT

SECTION IV

SITE HISTORY

Crouse-Hinds

The company operated the South landfill from 1960 to 1969. It received a combination of municipal waste from the city of Syracuse (1961-1964) and industrial waste which consisted of foundry mold and core sand, scrap steel drums and shot, fly ash, paint scrapings, garbage and construction-demolition materials. The site was closed and covered in 1969. During 1981, consultants under contract to Crouse-Hinds installed three groundwater monitoring wells. Both groundwater quality analysis and soil analysis were determined (Calocerinos & Spina Consulting Engineers, 1981). PCBs

The North landfill is still active. It was used from mid 1950 through 1972 for small quantities of solid wastes consisting primarily of foundry sand. In 1972, Crouse-Hinds decided to use the landfill for all non-putrescible solid wastes. These wastes consisted of foundry sand, floor sweepings, metal buffing and polishing residue, scrap lumber, plastics wastes, and paint scrapings. In addition zinc hydroxide sludge was deposited from 1972 to 1980. At the current time solid waste consists primarily of construction materials; the disposal of zinc hydroxide sludge and plastic wastes has been discontinued.

In April of 1981, Crouse-Hinds applied for a 360 permit to operate a non-hazardous landfill. Their application was withdrawn on March 10, 1982. As part of the 360 application, Crouse-Hinds initiated a groundwater monitoring program which included the installation of wells. A report (Calocerinos & Spina Consulting Engineers, 1981b) was prepared to provide additional information required by the State as part of the permitting process. This report included ground and surface water monitoring data which indicated that the groundwater had been contaminated by phenols. Subsequent studies (Thomsen Associates and Empire Soils Investigations, 1982 and 1983) have indicated the possible presence of toluene, benzene, and chloroform.

SECTION V

SUMMARY OF AVAILABLE DATA

Crouse-Hinds

Regional Geology and Hydrology

The site is located in the Erie-Ontario lowlands physiographic province. The bedrock of this region consists of sedimentary rocks of varying lithologies. Most of the rocks are deep aquifers with regional flow to the south.

In the recent past, most of New York State, including the site, has been repeatedly covered by a series of continental ice sheets. The activity of the glacier widened preexisting valleys and deposited widespread accumulations of till. In addition, distinct drumlin fields were formed in many parts of the region. The melting of ice, ending approximately 12,000 years ago, produced large volumes of meltwater; this water subsequently shaped channels and deposited locally thick accumulations of stratified, granular sediments.

As glacial ice retreated from the region, meltwater formed lakes in front of the ice margin. This region is covered by lake sediments, the most recent being from Lake Iroquois (a larger predecessor to Lake Ontario) and from Lake Tonawanda (an elongate lake which occupied an east-west valley and drained north into Lake Iroquois). The sediments consist of blanket silts, sand and beach ridges, which are occasionally underlain by lacustrine silts and clays (indicating quiet, deeper water deposition).

Granular deposits in this region frequently act as shallow aquifers, whereas lacustrine clays, as well as tills, often inhibit groundwater movement. However, fine-grained, water-lain sediments, such as silts and clays, frequently contain horizontal laminations and sand seams. These internal features facilitate lateral groundwater movement through otherwise low permeability materials.

Site Geology

The site geology is known from several hydrogeological investigations, which included on-site borings and well installations. Bedrock beneath the site is thought to occur at a depth of approximately 100 feet. It is probably Vernon Shale (Salina Group), weathered on the bedrock surface. Overlying the bedrock surface are sand and gravel layers, to a depth of approximately 50 feet. Above this depth, the soils become silty sands, silts, and clays. A peat layer is located at approximately 15 feet below the ground surface. Above the peat is a varying amount of fill.

Confining layer? need hydraulic conductivity test?

Site Hydrology

Site groundwater hydrology has been studied for the past several years. The following summary is based on a recent (1983) hydrogeological investigation. There appear to be two aquifers within the site soils. The shallow aquifer occurs within the fill material at a depth varying from 4 feet to 8 feet. Flow roughly follows the ground surface contours: south and northwest. A lower aquifer exists in the deep sands and gravels. This aquifer may be hydraulicly connected to the shale bedrock. Flow in the lower aquifer is toward the northwest. Two sets of potentiometric surface measurements have been recorded, showing approximately a 12-foot lowering of the surface between December 1982 and February 1983, and a significant increase in flow gradient during the same period. This change may be a normal seasonal occurrence.

Sampling and Analysis

Both surface and groundwater analytical data are available for the North Landfill. Figure V-1 shows sampling locations for a study conducted in 1981 as part of an application for a landfilling permit (Calocerinos and Spina, 1981a). Table V-1 summarizes analytical results of the sampling. As shown, both cyanide and phenols were detected in low concentrations in groundwater and Ley Creek. Additional monitoring wells were installed in 1983 (Rinaldo-Lee, 1983). The location of these wells is shown in Figure V-2, while the analytical results are shown in Table V-2. Benzene, toluene, and xylene were found in concentrations

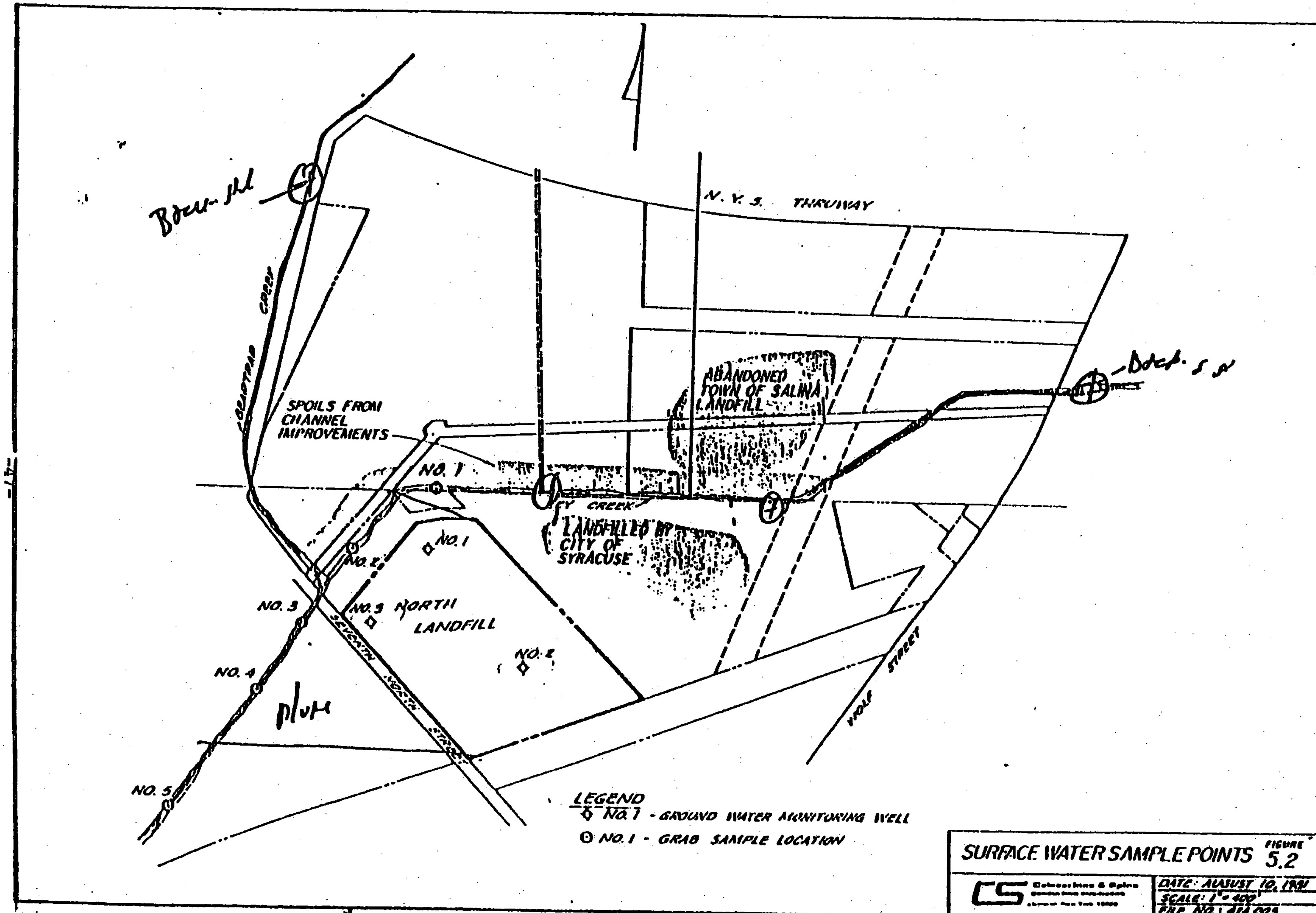


FIGURE V-1 SAMPLING POINTS -- CROUSE-HINDS NORTH LANDFILL (Calcoerinos & Spina, 1981)

TABLE V-1

SUMMARY OF ANALYTICAL DATA CROUSE-HINDS NORTH LANDFILL
(Calocerinos & Spina, 1981)

Sample Date	Sampling Location		Phenol (ppm)	Cyanide (ppm)
2/11/82[1]	Well	1	BDL*	--
		2	0.039	--
		3	BDL	--
7/2/81	Well	1	0.040	0.010
		2	0.065	0.012
		3	BDL	0.009
7/21/81	Well	1	0.016	0.021
		2	0.030	0.015
		3	BDL	0.010
8/5/81	Well	1	BDL	0.009
		2	0.016	0.009
		3	BDL	0.005
7/8/81	Stream	1	BDL	BDL
		2	BDL	0.007
		3	BDL	0.010
		4	BDL	0.009
		5	BDL	0.013
	Stream	1	BDL	0.013
		2	.013	0.010
		3	BDL	0.032
		4	BDL	0.015
		5	BDL	0.023

* Below Detectable Limit

[1] Crouse-Hinds DEC Meeting 2/23/82

FIGURE V-2 SAMPLING LOCATIONS CROUSE HINDS NORTH LANDFILL (Rinaldo-Lee, 1983)

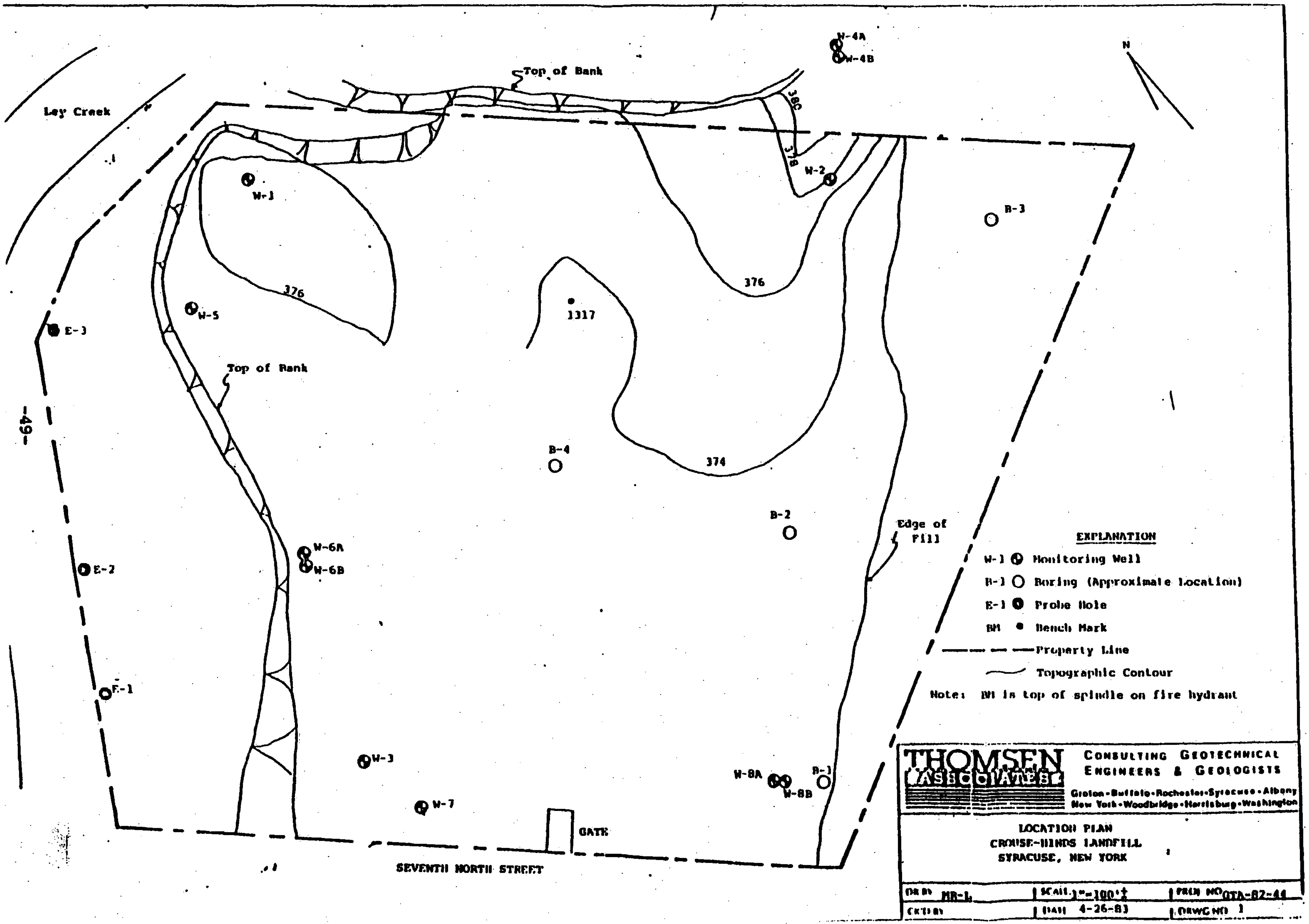


TABLE V-2
SUMMARY OF CHEMICAL ANALYSIS NORTH LANDFILL

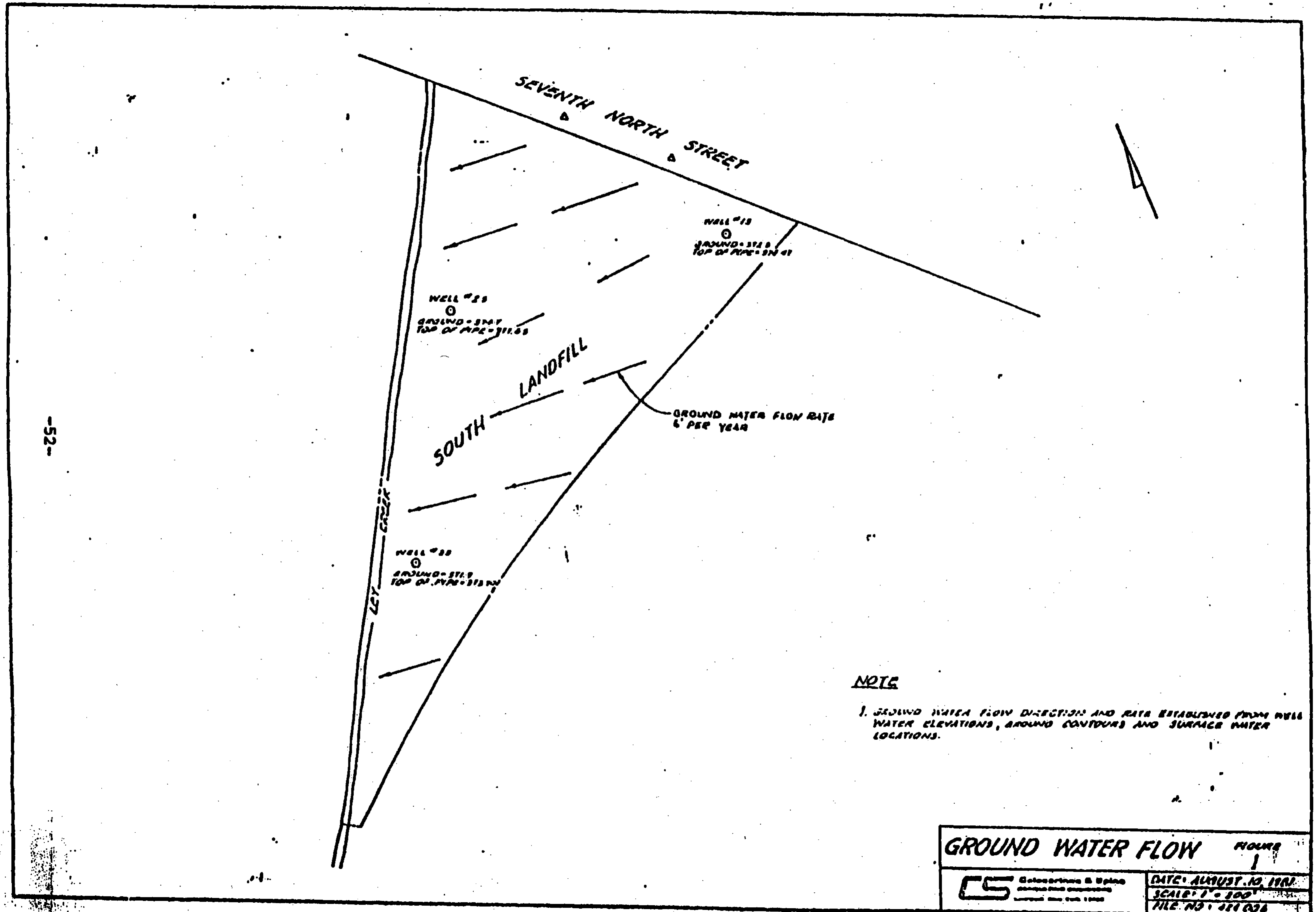
	Well	Date	pH	Conductance umhos	Phenol mg/l	Fe mg/l	Mn mg/l	Cyanide mg/l	Oil & Grease mg/l	Benzene ug/l	Toluene ug/l	Xylene ug/l	Total BTX ug/l	Other
SHALLOW WELLS	4A	12-27-82	7.8	5100	0.019	0.54	0.15	<0.004	-	4.0	1.0	36.0	41	*
		3-16-83	8.0	4900	0.025	3.7	0.1	-	3.4	12	6	136	154	-
	1	12-27-82	7.2	2650	<0.01	4.0	0.36	<0.004	-	4.0	4.0	20.0	24	*
		3-16-83	7.9	3000	0.04	27	0.2	-	21.9	9	5	92	106	-
	2	12-27-82	8.0	3750	<0.01	7.8	0.09	<0.004	-	210	33	<10	243	*
		3-16-83	7.7	3500	0.032	25.6	0.16	-	3.3	7	5	270	282	-
	3	12-27-82	7.1	4500	0.011	0.73	0.38	<0.004	-	220	<10	<10	220	*
		3-16-83	7.9	4000	<0.01	3.3	0.27	-	1.5	5	5	5	15	-
	6A	12-27-82	7.3	1550	0.213	0.15	0.15	<0.004	-	14	32	<10	46	*
		3-16-83	8.0	1380	0.262	7.0	0.19	-	4.3	15	28	50	93	-
	8A	12-27-82	8.5	2200	0.253	0.10	<0.01	<0.004	-	<1.0	<1.0	<1.0	<1.0	
		3-16-83	8.1	860	0.12	0.29	0.01	-	-	-	-	-	-	-
DEEP WELLS	4B	12-27-82	7.1	1500	<0.01	0.09	<0.01	<0.004	-	6.0	1.0	<1.0	7.0	
		3-16-83	8.1	1250	<0.01	0.07	0.01	-	3.3	5	5	5	15	-
	5	12-27-82	7.2	910	<0.01	0.02	<0.01	<0.004	-	<1.0	<1.0	<1.0	<1.0	
		3-16-83	8.0	1180	<0.01	<0.01	0.03	-	-	-	-	-	-	-
	6B	12-27-82	7.3	3500	<0.01	0.07	<0.01	<0.004	-	<1.0	<1.0	<1.0	<1.0	
		3-16-83	7.9	520	<0.01	0.13	0.02	-	2.0	5	5	5	15	-
	7	12-27-82	7.0	5400	<0.01	0.34	0.02	<0.004	-	<1.0	<1.0	<1.0	<1.0	
		3-16-83	8.0	4600	0.027	0.11	0.04	-	-	-	-	-	-	
	8B	12-27-82	7.1	8100	<0.01	0.32	0.07	<0.004	-	<1.0	<1.0	<1.0	<1.0	
		3-16-83	7.1	6500	0.167	0.04	0.06	-	-	-	-	-	-	

-not analyzed
*Chlorobenze suspected

ranging from 1 to 282 ppb. The highest concentrations of these parameters were found in the shallow wells. This study is still in progress and preliminary results have also indicated the presence of chloroform (Scott, 1983).

Soil and groundwater analyses are also available for the South Landfill (Calocerinos and Spina, 1981b). Well locations are shown on Figure V-3. Complete groundwater analyses for 1981 are included in Appendix A. Cyanides ranging in concentration from 0.007-0.015 ppm and total organic carbon ranging from 15-60 ppm were detected.

FIGURE V-3 SAMPLING LOCATIONS CROUSE-HINDS SOUTH LANDFILL



SECTION VI

ASSESSMENT OF ADEQUACY OF DATA

Site: Crouse Hinds

HRS Data Requirement	Comments on Data
Observed Release	
Ground Water	Data available, adequate for HRS evaluation.
Surface Water	Data available, adequate for HRS evaluation.
Air	No available data, field data collection recommended.
Route Characteristics	
Ground Water	Data available, adequate for HRS evaluation.
Surface Water	Data available, adequate for HRS evaluation.
Air	Data available, adequate for HRS evaluation.
Containment	Information available, adequate for HRS evaluation.
Waste Characteristics	Information available, adequate for HRS evaluation.
Targets	Insufficient information, more ground water target data collection recommended.
Observed Incident	Information available revealed no report of incident. No further investigation recommended.
Accessibility	Adequate information available.

SECTION VII

PHASE II WORK PLAN

Site: Crouse Hinds

Objectives

The objectives of the Phase II activities are:

- To collect additional field data necessary to complete the HRS scoring.
- To perform a conceptual evaluation of remedial alternatives and estimate budgetary costs for the most likely alternative.
- To prepare a site investigation report.

The additional field data required to complete the HRS are defined as follows:

Air - An air monitoring survey with an OVA meter is recommended to check the air quality above the surface of the site.

TASK DESCRIPTION

The proposed Phase II tasks are described in Table VII-1.

COST ESTIMATE

The estimated manhours required for the Phase II project are presented in Table VII-2 and the estimated project costs by tasks are presented in Table VII-3. The cost for performing the Phase II project is $7,916.

TABLE VII-1
PHASE II WORK PLAN - TASK DESCRIPTION
Site: Crouse Hinds

Tasks		Description of Task
TASK II-A	Update Work Plan	Review the information in the Phase I report, conduct a site visit, and revise the Phase II work plan.
II-B	Conduct Geophysical studies	No further studies necessary.
II-C	Conduct Boring/Install Install Monitoring Wells	No further installation of monitoring wells necessary
II-D	Construct Test Pits/ Auger Holes	No further construction of test pits/auger holes necessary.
II-E	Perform Sampling and Analysis	
	Soil samples from borings	No further sampling necessary.
	Soil samples from surface soils	No further sampling necessary.
	Soil samples from test pits and auger holes	No further sampling necessary.
	Sediment samples from surface water	No further sampling necessary.
	Ground-water samples	No further sampling necessary.
	Surface water samples	No further sampling necessary.
	Air samples	Using the OVA, determine the presence of organics.
	Waste samples	No further sampling necessary.
II-F	Calculate Final HRS	Based on the field data collected in Tasks IIB - IIE, complete the HRS form.
II-G	Conduct Site Assessment	Prepare final report containing Phase I report, additional field data, final HRS and HRS documentation records, and site assessments. The site assessment will consist of a conceptual evaluation of alternatives and a preliminary cost estimate of the most probable alternative.
II-H	Project Management	Project coordination, administration and reporting.

TABLE VIII-2
PERSONNEL RESOURCES BY TASK
PHASE II HRS SITE INVESTIGATION (SITE: CROUSE HINDS)

TASK DESCRIPTION	TEAM MEMBERS, MANHOURS													
	PIC	TRG	PM	DPM	PCH	QAM	HSM	FTL	FT	QAAL	QAAT	SS	TOTAL HOURS	TOTAL $
II-A UPDATE WORK PLAN	1		4	1			1	2		6		8	23	376.8
II-B CONDUCT GEOPHYSICAL STUDIES													0	0
II-C CONDUCT BORING/INSTALL MONITORING WELLS													0	0
II-D CONSTRUCT TEST PITS/AUGER HOLES													0	0
II-E PERFORM SAMPLING AND ANALYSIS														
SOIL SAMPLES FROM BORINGS													0	0
SOIL SAMPLES FROM SURFACE SOILS													0	0
SOIL SAMPLES FROM TEST PITS AND AUGER HOLES													0	0
SEDIMENT SAMPLES FROM SURFCE WATER													0	0
GROUND-WATER SAMPLES													0	0
SURFACE WATER SAMPLES													0	0
AIR SAMPLES			1					1	8			2	12	133.66
WASTE SAMPLES													0	0
II-F CALCULATE FINAL HRS			3	3				3	24			16	49	563.23
II-G CONDUCT SITE ASSESSMENT	1	2	4	2				4	8	6	24	32	83	1079.44
II-H PROJECT MANAGEMENT	2		6	2		4	4					8	26	442.9
TOTALS	4	2	18	8	0	4	5	10	40	12	24	66	193	2546.03

TABLE VII-3
COST ESTIMATE BREAKDOWN BY TASK
PHASE II HRS SITE INVESTIGATION (SITE: CROUSE HINDS)

TASK DESCRIPTION	DIRECT LABOR HOURS	DIRECT LABOR COST	OTHER DIRECT COSTS (ODC), $ LAB ANALYSIS	TRAVEL AND SUBSISTANCE	SUPPLIES	EQUIP. CHARGES	SUBCON-TRACTORS	MISC.	SUBTOTAL ODC	TOTAL ($)
II-A UPDATE WORK PLAN	23	376.0		100	50	50		25	225	601.0
II-B CONDUCT GEOPHYSICAL STUDIES									0	0
II-C CONDUCT BORING/INSTALL MONITORING WELLS									0	0
II-D CONSTRUCT TEST PITS/AUGER HOLES									0	0
II-E PERFORM SAMPLING AND ANALYSIS										
SOIL SAMPLES FROM BORINGS									0	0
SOIL SAMPLES FROM SURFACE SOILS									0	0
SOIL SAMPLES FROM TEST PITS AND AUGER HOLES									0	0
SEDIMENT SAMPLES FROM SURFACE WATER									0	0
GROUND-WATER SAMPLES									0	0
SURFACE WATER SAMPLES									0	0
AIR SAMPLES	12	133.66		85	25	15		5	130	263.66
WASTE SAMPLES									0	0
II-F CALCULATE FINAL HRS	49	563.23			50	50		25	125	688.23
II-G CONDUCT SITE ASSESSMENT	83	1029.44			100	200		75	375	1404.44
II-H PROJECT MANAGEMENT	26	442.9		150	150	50		50	400	842.9
TOTALS	193	2546.03	0	335	375	365	0	180	1255	3801.03

OVERHEAD = 3635.73
SUBTOTAL = 7436.76
FEE = 479.09
TOTAL PROJECT COST = 7915.85

EMPIRE
SOILS INVESTIGATIONS INC.

HYDROGEOLOGIC INVESTIGATION
CROUSE-HINDS LANDFILL
SYRACUSE, NEW YORK

FOR
Crouse-Hinds Company, Inc.
Syracuse, New York

Job No. GTA-82-44
November 1983

105 CORONA AVENUE, GROTON, NY 13073, 607-898-5881

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Figures

Appendices

THOMSEN ASSOCIATES

HYDROGEOLOGIC INVESTIGATION
CROUSE-HINDS LANDFILL
SYRACUSE, NEW YORK

1.0 INTRODUCTION

Thomsen Associates was retained by Crouse-Hinds Company to perform a hydrogeologic investigation at their landfill north of Seventh North Street. This report presents our findings, conclusions, and recommendations from our analysis of data obtained during our investigation at the site. This report is presented to Crouse-Hinds in accordance with P. O. F337014A issued September 20, 1983 by Crouse-Hinds Company and completes our contract to Crouse-Hinds Company for P. O. F337014A.

Assistance during the project was provided by David Ronkainen from Crouse-Hinds, Gregory DeSantis from Calocerinos and Spina, and Stephen Rossello from Thomsen Associates.

1.1 Purpose and Scope

The purpose of our investigation was to determine the direction of groundwater flow beneath the landfill in the peat deposits underlying the foundry waste and in a sand and gravel layer separated from the peat by 12 to 52 feet of silt and clay. Specifically the work was to include:

- Locating and designing six monitoring well clusters which would include two for sampling and four for determining groundwater movement.

- o Installing the monitoring well clusters under the supervision of a geologist from our staff.
- o Interpreting groundwater measurements taken by others and preparing a report after one year of seasonal sampling.

The scope of this report is limited to:

- o Review of available geologic information on the area.
- o Analysis of data obtained from soil borings and monitoring wells installed by Empire Soils Investigations, Inc. under the supervision of a geologist from Thomsen Associates for this study.
- o Analysis of data obtained from boring logs drilled by Parratt-Wolff for a previous study.
- o Analysis of water level data provided by Calocerinos and Spina.

This report has been prepared for the exclusive use of Crouse-Hinds Company for specific application to their landfill north of Seventh North Street in accordance with generally accepted hydrogeologic practices.

1.2 Methodology

1.2.1 Borings

Eleven borings were drilled during the investigation (E-1, E-2, E-3, W-4A, W-4B, W-5, W-6A, W-6B, W-7, W-8A and W-8B). A rotary drill rig was used to advance the borings. Five of the borings were 42-62 feet deep and used a combination of 3-3/4 inch ID hollow stem auger casing and 4 inch ID NW casing to advance the hole (W-4B, W-5, W-6B, W-7 and W-8B). Next to three of the deep borings, shallow borings 12-20 feet deep were drilled using a 3-3/4 inch ID hollow stem auger casing (W-4A, W-6A and W-8B). Three borings 27 feet deep were drilled west of the landfill using a 3-1/4 inch ID hollow stem auger casing (E-1, E-2 and E-3). The location of all borings is shown on Figure 2 and boring logs are found in Appendix A.

1.2.2 Soil Sampling

Soil samples were taken in the eight deeper borings (E-1, E-2, E-3, W-4B, W-5, W-6B, W-7 and W-8B). Soil samples were not taken in the three shallow borings drilled next to deeper borings (W-4A, W-6A and W-8A). Samples were taken using a two-foot split-spoon sampler. Split spoon samples were taken in general accordance with ASTM Method D-1586. However, the split spoon sampler was driven 24 inches for each sample rather than the 18 inches specified in ASTM Method D-1586. The depth where samples were taken in each boring is shown on the boring logs. All samples were visually classified in the field by a geologist.

1.2.3 Monitoring Wells

Monitoring wells were installed in eight of the eleven borings (W-4A, W-4B, W-5, W-6A, W-6B, W-7, W-8A and W-8B). The observation wells were constructed of threaded flush-joint, two-inch diameter PVC pipe with machine slotted well screens having 0.02 inch slots. All joints were sealed with teflon tape. The observation wells were installed inside the hollow stem auger to allow for placement of clean sand around the well screen and a bentonite seal above the sand. All wells except for W-4B have a five-foot well screen. Well 4B has a ten-foot well screen. A sand pack was placed around the well screen. Above the well screen the annular space was sealed with bentonite and grout seal to prevent leakage down the well casing. A locking metal protector pipe was cemented over the PVC pipe.

The shallow wells (B-4A, B-6A and B-8A) were placed in a peat layer beneath the fill. The deeper wells (W-4B, W-5, W-6B, W-7 and W-8B) were installed in a deeper sand and gravel layer separated from the peat by 12-54 feet of silt and clay.

1.2.4 Field Hydraulic Conductivity Tests

A field test was performed on Well-6A to obtain an estimate of the hydraulic conductivity of the peat underlying the foundry waste. The methodology of Bouwer and Rice (1976) was used to perform the field tests and analyze the data. Results from the field test are found in Appendix E.

1.2.5 Water Elevations

All wells were developed by bailing following their installation. Water levels were taken monthly between December, 1982 and October, 1983 by Calocerinos and Spina. Thomsen Associates surveyed the locations and elevations of all wells. Vertical elevations were referenced to a bench mark in the center of the landfill which is the top of the spindle on a fire hydrant.

2.0 GEOLOGY

2.1 General Geology

The Crouse-Hinds landfill is located northeast of Seventh North Street and south of Ley Creek in Syracuse, New York (Figure 1). It is approximately 1 mile east of Onondaga Lake. The landfill is located within the Ley Creek stream valley. Subsurface deposits consist of over 80 feet of alternating layers of sand, silt and clay overlying shale and dolostone bedrock of Silurian Age. (Richard and Fisher, 1970). The majority of the unconsolidated deposits are of glacio-lacustrine origin, deposited at the end of the last glaciation. However, more recent organic deposits are found above glacio-lacustrine deposits in the area.

2.2 Site Geology

The soils encountered beneath the landfill can be divided into 3 units, organic deposits, silt and clay, and a sand and gravel layer. The eleven borings drilled by Empire Soils Investigations were used in conjunction with borings from previous investigations to develop geologic profiles of the subsurface deposits showing the relationship between the organic deposits, silt and clay, and sand and gravel layers. The location of the geologic cross sections and borings is shown on Figure 2. The geologic profiles are shown on Figures 7 and 8.

As shown on the geologic profiles (Figures 7 and 8), the foundry waste has been placed on top of organic deposits. The organic deposits are identified as peat on the geologic profiles and consist of organic silt, peat, marl and fine sand. The thickness of organic deposits encountered in the borings through the landfill ranged from 0.5 inches at W-5 to 9 feet at W-8B. The borings west of the landfill (E-1, E-2, and E-3) encountered 10.5 to 17 feet of organic deposits. In some areas the peat has been compressed by the fill and pushed out the edges of the landfill so only traces of peat were encountered (W-5).

Glacio-lacustrine deposits consisting of predominantly silt and clay are found below the organic deposits. The top of the glaciolacustrine silt and clay unit is found between elevations 354 and 360. The glacio-lacustrine silt and clay deposits varied from 12 feet thick at B-2 to 54 feet thick at B-4. The silt and clay deposits are thickest in the southwestern portion of the landfill (B-4, W-6B, W-7). In the area where the thickest silt and clay deposits occur a layer of silt and fine sand was found in the upper part of the silt and clay deposit (see cross sections A-A' and B-B', Figures 7 and 8). The silt and clay deposit thins to the east. Only 14 feet of silt and clay were found at W-4B.

Sand and gravel are found below the silt and clay glaciolacustrine deposits. This deposit consists of medium to coarse sand with some gravel. Borings drilled for this investigation did not encounter the bottom of the sand and gravel deposit. However, previous borings indicate this deposit is at least 20 feet thick (Appendix C).

3.0 GROUNDWATER FLOW

Monitoring wells were installed around the periphery of the landfill to determine the direction of groundwater flow in the organic deposits directly beneath the landfill and in the deeper sand and gravel layer which is separated from the organic deposits by 12 to 54 feet of silt and clay. Water levels in three new observation wells (W-4A, W-6A and W-8A) and three wells previously installed by others (W-1, W-2 and W-3) were used to determine the direction of groundwater flow in the organic deposits. Five new wells (W-4B, W-5, W-6B, W-7 and W-8B) were installed in the sand and gravel layer to determine the direction of groundwater flow in this unit. Water level elevations were taken monthly between December, 1982 and October, 1983, to investigate seasonal variations in the direction of groundwater flow. Groundwater in the organic deposits is under water table conditions. The direction of groundwater flow in the organic deposits is shown on the water table map, Figure 3. Water table contours for both summer and winter conditions were plotted. The general direction of groundwater flow (west) beneath the landfill in both summer and winter is eastward, toward Ley Creek. However, during the winter a groundwater divide is found in the middle of the landfill so there is a component of flow toward the south. The hydraulic gradient of the water table varies from 0.025 ft/ft to 0.0025 ft/ft.

The average linear velocity of groundwater flow through the peat deposit beneath the landfill can be calculated using Darcy's Law, $\bar{v} = Ki/n$ where $\bar{v}$ is the average linear velocity of flow, K is the hydraulic conductivity, i is the hydraulic gradient, and n is effective porosity. A "slug" test was performed on W-6A to evaluate the hydraulic conductivity of the organic deposits following the methodology of Bouwer and Rice (1976) (Appendix E). The result of the field test indicates a hydraulic conductivity of $5x10^{-4}$cm/sec. However, Todd (1980) estimates the hydraulic conductivity of peat is an order of magnitude higher, about $7x10^{-3}$cm/sec. Therefore, in calculating the velocity of groundwater flow in the organic deposits $5x10^{-3}$cm/sec was used for hydraulic conductivity to provide an upper limit on the rate of groundwater flow in the peat deposit. Assuming $K = 5x10^{-3}$cm/sec, i = 0.01 ft/ft (average gradient during August) and n = 0.44 (Todd, 1980) the average linear velocity of flow in the peat deposit beneath the landfill is about 120 ft/year. Since the landfill is within 350 feet of Ley Creek, groundwater flowing beneath the landfill in the organic deposits should reach Ley Creek within three years.

Well W-4A is generally upgradient of the landfill. However, water level readings in December-March show there was a slight gradient from W-2 toward W-4A. Thus, W-4A is not always upgradient of the landfill so can not be considered outside the influence of the landfill.

Five new piezometers were installed in the deep sand and gravel aquifer to investigate groundwater flow conditions in this unit. The sand and gravel layer is separated from the organic deposits by at least 12 feet of silt and clay. The annular space around the pipe in the bore hole was sealed with a bentonite and cement grout above the well screen to ensure that water level measurements in these wells reflect the potentiometric surface of the sand and gravel aquifer. The water level measurements in the deep wells indicate there is a significant seasonal change in the potentiometric surface of the sand and gravel aquifer (Figures 4-6). During the summer the general direction of groundwater flow beneath the landfill in the sand and gravel aquifer is toward the east (Figure 6). Water level measurements also indicate the sand and gravel aquifer is under artesian conditions (Figure 8). Except at W-4A and W-4B, the vertical gradient between the sand and gravel aquifer and organic deposits beneath the landfill is upward during the summer months.

However, in the winter the direction of groundwater flow in the sand and gravel deposit changes 180°. Water level measurements in the deep wells between late December and March indicate the general direction of groundwater flow in the sand and gravel aquifer is westward (Figures 4 and 5). The potentiometric surface also is much lower in the winter, declining 15 to 20 feet in all wells except W-4B. With the decline in the potentiometric surface, the vertical gradient also changes. Although the sand and gravel aquifer is still under artesian conditions, the vertical gradient in the winter between the organic deposits and sand and gravel layer is downward (Figure 7).

Any testing?

The thickness of the silt and clay deposit appears related to its effectiveness as a confining layer. At W-4B where the silt and clay deposit is only 14 feet thick water levels do not show the large seasonal variations found in the other deep wells where the silt and clay layer was at least 25 feet thick (W-8B, W-6B, W-7, W-8), and upward vertical gradients observed in the summer at other locations between wells in the sand and gravel aquifer and wells in the organic deposits were not found between W-4B and W-4A. This indicates that although the lower hydraulic conductivity of the silt and clay layer with respect to the overlying organic deposits will restrict the downward flow of leachate from the organic deposits to the sand and gravel aquifer, the silt and clay layers is not as effective a confining unit at W-4B as in areas where the vertical gradient is upward during half the year. The upward gradient provides an additional barrier to downward migration of leachate. Thus, the silt and clay layer is a more effective confining layer in areas where it is thicker because a hydrologic restriction (gradient) is added to the geologic restriction (low hydraulic conductivity) to the downward migration of leachate through the silt and clay layer.

Because of the seasonal reversal in flow direction between winter and summer in the sand and gravel aquifer, no wells are entirely upgradient of the landfill. However, W-8B is cross-gradient under both winter and summer flow conditions, and at the edge of the landfill, so it should provide background water quality. During summer flow conditions W-4B is downgradient of the landfill while during winter flow conditions W-5, W-6B and W-7 are downgradient of the landfill.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Monitoring wells installed in the organic deposits beneath the fill confirm earlier investigations which indicated groundwater flow beneath the landfill in this deposit was westward, toward Ley Creek. Groundwater flow calculations indicate the average linear horizontal velocity of flow in the organic deposits is approximately 120 ft/year. Since Ley Creek is within 350 feet of the landfill, groundwater flowing beneath the landfill should reach Ley Creek within 3 years.

The organic deposits are separated from a deeper permeable sand and gravel deposit by 12 to 54 feet of silt and clay. Water level measurements in the deep piezometers installed to monitor groundwater movement in the sand and gravel layer show a significant seasonal variation in the direction of groundwater flow in this deposit. The horizontal direction of groundwater flow reverses from eastward in the summer to westward in the winter. Vertical gradients between the sand and gravel aquifer and organic deposits also reverse from upward in the summer to downward in the winter when the potentiometric surface in the sand and gravel aquifer declines 15 to 20 feet. The sand and gravel layer is an artesian aquifer, confined by the silt and clay deposits which separate it from the overlying organic deposits.

Any leachate produced by the landfill should flow horizontally through the organic deposits toward Ley Creek. The silt and clay deposit underlying the peat will restrict vertical migration of leachate due to its lower hydraulic conductivity. Moreover, vertical gradients between the underlying sand and gravel aquifer and organic deposits are upward during much of the year (April-early December) forming an additional restriction to downward migration of leachate. Thus, the effect of the landfill on water quality should be restricted to groundwater in the organic deposits.

Wells W-6A, W-8A, W-1 and W-3 are downgradient monitoring points in the organic deposits. However, a new upgradient well in the organic deposits is needed to evaluate the difference between background water quality in the organic deposits and water quality in the organic deposits downgradient of the landfill. Well W-4A is not an adequate background monitoring well because it is not always upgradient of the landfill and was installed through fill which contained foundry waste. A new upgradient monitoring well should be placed further from the landfill and in an area where there is no foundry waste.

An additional downgradient monitoring well should also be placed in the sand and gravel deposit to monitor water quality in this unit during summer flow conditions when the direction of flow is eastward. Well W-4B is the only downgradient monitoring well during summer flow conditions when the direction of flow in the sand and gravel unit is eastward. When the direction of flow is westward (winter flow conditions) wells W-7, W-6B and W-5 all provide downgradient monitoring points. Due to the reversal in flow direction it is difficult to locate an upgradient monitoring well in the sand and gravel deposit. Well W-8B is in the best location for providing background water quality in the sand and gravel aquifer because it is cross gradient to the direction of flow under both winter and summer flow conditions and is at the edge of the landfill.

Respectfully submitted,

THOMSEN ASSOCIATES

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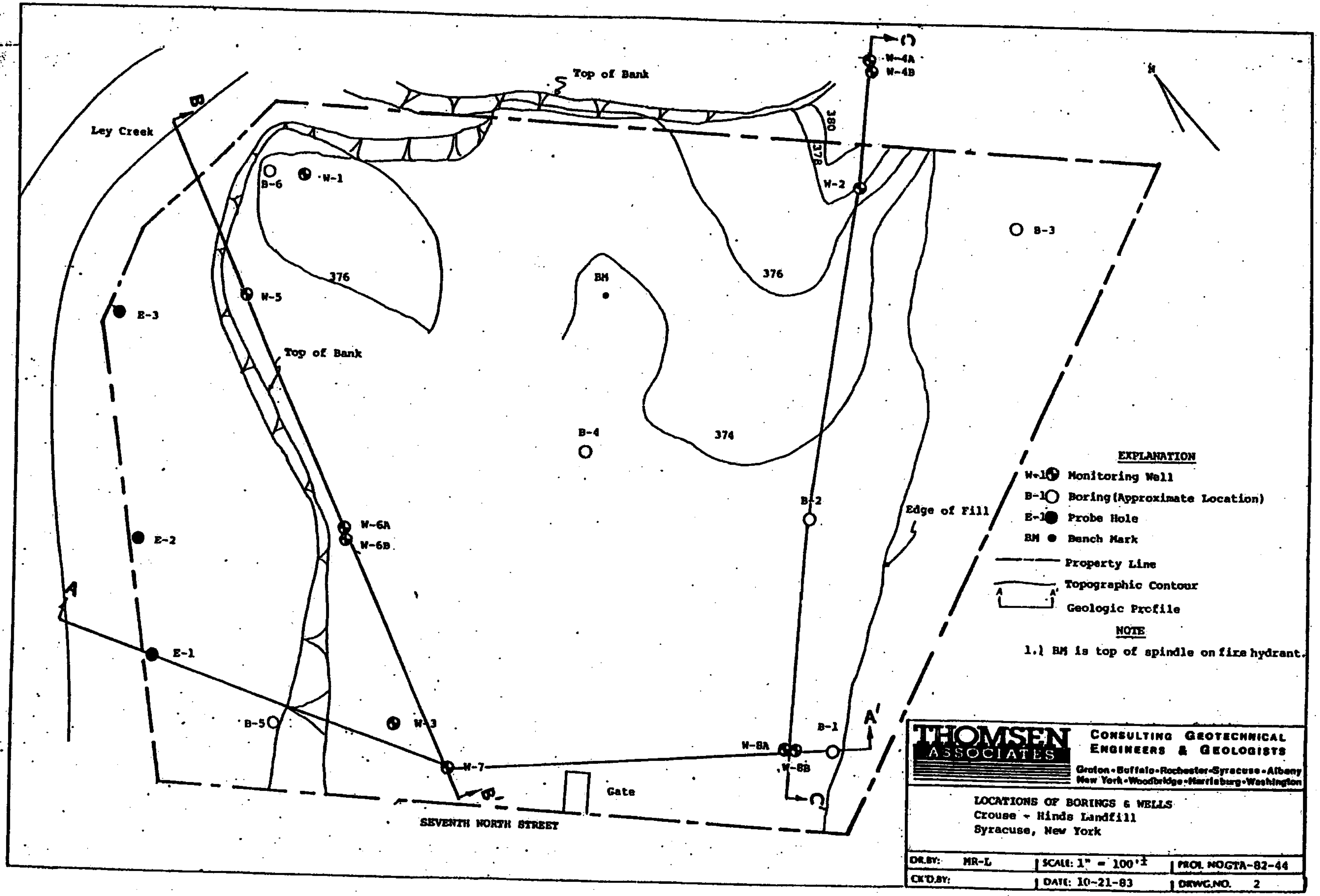
Top of Bank
Ley Creek
B
W-4A
W-4B
380
378
B-6
W-1
W-2
B-3
376
376
BM
W-5
E-3
Top of Bank
B-4
374
EXPLANATION
W-1 Monitoring Well
B-1 Boring (Approximate Location)
E-1 Probe Hole
BM Bench Mark
Property Line
Topographic Contour
Geologic Profile
NOTE
1.) BM is top of spindle on fire hydrant.
B-2
Edge of Fill
W-6A
W-6B
E-2
A
E-1
B-5
W-3
W-7
B'
Gate
SEVENTH NORTH STREET
W-8A
W-8B
B-1
A'
THOMSEN ASSOCIATES
Consulting Geotechnical Engineers & Geologists
Groton • Buffalo • Rochester • Syracuse • Albany
New York • Woodbridge • Harrisburg • Washington
LOCATIONS OF BORINGS & WELLS
Crouse - Hinds Landfill
Syracuse, New York
DR.BY: MR-L
SCALE: 1" = 100'±
PROJ. NO GTA-82-44
CK'D.BY:
DATE: 10-21-83
DRWG.NO. 2

ATTACHMENT 2

SAMPLING AND ANALYSIS PLAN

InteGreyted
International

COOPER INDUSTRIES, INC.

ATTACHMENT 2
SAMPLING AND ANALYSIS PLAN
NORTH AND SOUTH LANDFILLS
CROUSE-HINDS FACILITY
SYRACUSE, NEW YORK

9 JANUARY 2004

Prepared for:

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InteGreyted Project No. 0310025P

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List of Appendices

1.0 INTRODUCTION

This document represents the Sampling and Analysis Plan (SAP), which is Attachment 2 of the Preliminary Site Assessment (PSA) Work Plan for the Cooper Industries, Inc., Crouse-Hinds Facility Landfills (i.e., North and South Landfills) site located in the Town of Salina, New York (hereinafter the "Site"). This SAP describes the sampling program and procedures to be followed during all sample collection and handling tasks and other investigative tasks associated with this project.

2.0 SAMPLING ACTIVITIES AND PROCEDURES

As part of the PSA field tasks, surface and subsurface soil, sediment, surface water and groundwater samples will be collected and analyzed to determine the nature and extent of any potentially impacted environmental media at the Site. Detailed field sampling procedures, proposed sampling locations, and analyses are described in the following sections of this SAP. A detailed summary outlining the sampling program is presented in the accompanying Quality Assurance Project Plan (QAPP) on Table 6-1 of that document (See Attachment 3). Figure 3-1 in the PSA work plan depicts the approximate locations for the various sampling activities. Detailed sample collection/handling procedures and record keeping is presented in Appendix A.

2.1 ANALYTICAL PROCEDURES

PSA activities will include soil, sediment, surface water and groundwater sample collection and analysis for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), target analyte list (TAL) metals, cyanide and pesticides/PCBs. In addition, surface water and groundwater samples will also be analyzed for phenols and a number of soil samples associated with the test pit investigation will be analyzed for waste characterization parameters by the Toxicity Characteristics Leaching Procedure (TCLP). In general, laboratory analytical procedures will adhere to NYS ASP 2000 and/or to USEPA SW-846 methodologies as appropriate. Samples collected during the PSA will be analyzed by a NYSDOH ELAP certified analytical laboratory that participates in the Contract Laboratory Program (CLP). Laboratory analytical procedures will adhere to NYS Analytical Services Protocol (ASP) 2000 methodologies and protocols. **Note:** the analytical laboratory will be selected prior to the start of field activities.

2.2 *SOIL INVESTIGATION*

2.2.1 Test Pit Excavation

A total of 19 test pits (eight on South Landfill and 11 on North Landfill) will be advanced in fill material existing at both landfills to document the nature of fill and underlying soil (PSA Work Plan Figure 3-1). The majority of the test pits will be advanced at the perimeter of the waste mass in each landfill. All test pits will be logged in detail by InteGreyted's on-site geologist. Soil and fill material exposed at each test pit will be screened in the field with a photoionization detector (PID) for the potential presence of volatile organic compound (VOC) vapors, as discussed below.

Test pits will be advanced to the base of the fill material provided that this can be accomplished safely and within the limits of the equipment. Exposed material will be evaluated, screened with a PID and logged. Selected samples (i.e., one per test pit for a total of 19 soil samples) will be containerized and submitted for laboratory analysis. Excavated material will be placed back into the excavation upon completion unless grossly contaminated. If materials are grossly contaminated they will be staged on, and covered with plastic pending proper management. The limits of each test pit and the location of each soil sample will be marked with stakes to allow for surveying.

2.2.2 Test Pit Excavation Soil Sampling

For safety purposes, soil samples may be collected using heavy equipment (i.e., backhoe/trackhoe shovel to extract the soil sample to avoid entering the excavation). Soil samples from various areas and depths of the excavation will be placed and sealed in a labeled sampling container. The samples will then be allowed to equilibrate for a minimum of ten minutes and then a PID will be used to measure the concentration of VOC vapors in the headspace of the container. Based on the PID readings, the sample typically having the highest PID reading will be selected for laboratory analysis. However, other criteria such as evidence of staining, odors, waste material encountered, sample depth and/or the history of an area will also be factored into the selection of samples. One soil sample per test pit will be analyzed for VOCs, SVOCs, TAL metals, cyanide and pesticides/PCBs as discussed above. Additionally, ten soil samples from interior test pits will be collected and analyzed for waste characterization parameters by the Toxicity Characteristics Leaching Procedure (TCLP).

2.2.3 *Surface Soil Sampling*

InteGreyted will inspect the landfills to document the presence of drainage swales and to estimate if significant leachate releases and/or affected soil and sediment are present. Ten surface soil samples will be collected for laboratory analysis based on field observations and monitoring. A detailed log describing the location, nature, physical appearance, results of PID screening, etc., will be prepared for each sample. The location of each surface soil sample will be marked with stakes to allow for surveying. Surface soil samples will be analyzed for VOCs, SVOCs, TAL metals, cyanide and pesticides/PCBs as discussed above.

2.3 *HYDROGEOLOGIC INVESTIGATION*

2.3.1 *Existing Monitoring Wells*

Based on the results of a well inspection and inventory being conducted by others, InteGreyted will utilize existing groundwater monitoring wells and will install new wells to evaluate groundwater. It is our understanding that the following wells exist at the Site as follows:

North Landfill - Six shallow wells (20 feet deep or less) and five deep wells (up to 59 feet deep);

South Landfill - Three wells, construction details not available.

Existing wells will be repaired as needed, then carefully developed using low-flow techniques discussed in Section 2.3.3 below. Well development water will be discharged on-site. As part of this PSA, each of the existing monitoring wells will be purged and samples as discussed in Section 2.3.4 below.

2.3.2 Monitoring Well Installations

Five new wells will be installed at the Site: two well nests (consisting of a 20-foot well and a 50-foot well), and one additional shallow well. The borings for the five new wells will be drilled using 4.25-inch inside diameter (ID) hollow-stem auger (HSA) drilling techniques under the supervision of InteGreyted's on-site geologist. During drilling activities, auger cuttings will be logged by a geologist and field screened with a PID to determine if VOCs are present. Split-spoon soil samples will not be collected during well installation activities. Estimated monitoring well locations are shown on Figure 3-1 of the PSA Work Plan.

Following completion of each well borings, a two-inch-diameter PVC monitoring well constructed of PVC riser and ten feet of 0.01-inch slotted PVC well screen will be installed in each boring to the desired depth. In the shallow wells, the well screen will be installed to straddle the water table. The well screen in the deep wells will be installed in the sand and gravel unit and the actual depth will be dependent on field observations during drilling.

A sand pack will be installed around the well screen and will extend two feet above the top of the screen. A one to two foot-thick bentonite pellet seal will be placed above the sand pack and a cement/bentonite grout will be utilized to backfill the remainder of the annulus. The monitoring wells will be completed with a protective steel casing and a concrete pad tapered to direct surface water away from the well. In high traffic areas, guard posts may be installed surrounding the well for protection. Following installation, reference points will be marked on the top of each well casing. A geologist will supervise all monitoring well construction activities and will prepare well construction logs.

Upon completion of well installation activities all generated wastes (soil cuttings) will be staged on plastic and properly secured pending proper management.

2.3.3 *Well Development*

Well development will begin no sooner than 24 hours after final completion of each monitoring well. Low-flow purging and development techniques in accordance with the USEPA's Low Stress Purging and Sampling Procedures for the Collection of Groundwater Samples from Monitoring Wells, dated 23 September 1999 will be used to develop each of the monitoring wells. Each well will be developed until the turbidity of the water is below 50 NTU, and/or field parameters (pH, conductivity, and temperature) stabilize. Development water from the wells will be checked periodically for the presence of a sheen or free product. Development water will be discharged directly to the ground surface, unless there is visible evidence of impact. In the event that a sheen or free product is present, development water will be containerized pending proper management.

2.3.4 *Groundwater Sampling*

Groundwater sampling will be conducted no sooner than one week after final development of each monitoring well. Prior to sampling each monitoring well will be purged a minimum of three well volumes. Wells will be purged using either low-flow purging techniques or dedicated disposable bailers. Purge water will be discharged directly to the ground surface, unless there is visible impact. In the event that sheen or free product is present, purge water will be containerized pending proper management.

Following purging groundwater samples will be collected from each well with a dedicated disposable polyethylene bailer and rope. Field parameters (pH, temperature, conductivity, and turbidity) and groundwater elevation data will be collected from each monitoring well prior to purging (elevation data) and during sampling (field parameters). Groundwater samples will be analyzed for VOCs, SVOCs, pesticides/PCB, TAL metals, cyanide and phenols as discussed above.

2.4 *LEY CREEK SAMPLING*

To evaluate water and sediment quality in Ley Creek at locations proximal to the Site, InteGreyted will collect four surface water samples and four sediment samples from the creek. Sampling locations will be established at the north and south boundaries of each landfill (four locations total) based on field observations and availability of surface water and sediment for sample collection purposes. Once the locations have been established, a surface water sample will be collected at each location by dipping the sample container into the creek with the mouth of the container facing upstream. Surface water samples will be analyzed for VOCs, SVOCs, TAL metals, cyanide, phenols and pesticides/PCBs, as discussed above.

Upon completion of surface water sample collection, a sediment sample will be collected from each location using hand trowels, dedicated sampling tools or other suitable device to retrieve sediment from the sample location. The sediment will be transferred to a stainless steel mixing bowl or other suitable mixing tool. Any free liquid will be decanted and visually inspected for any sheen or other evidence of potential contamination. After the liquid is decanted, sample material for VOC analysis will be transferred directly into the sample containers. The remaining sample material will be homogenized and transferred into the remaining sample containers. Sediment samples will be analyzed for VOCs, SVOCs, TAL metals, cyanide and pesticides/PCBs, as discussed above.

Samples will be collected from the downstream locations first, then progressively upstream, to minimize cross-contamination. A description of each sample and sample location will be prepared, and each sample will be containerized for submittal to the laboratory. The location of each surface water/sediment sample will be marked with stakes to allow for surveying.

2.5 STORM SEWER ASSESSMENT

InteGreyted will attempt to locate the old storm sewer that was reportedly used in the past to discharge process water. If found, the storm sewer catch basins, outlet and any associated sample collection points will be surveyed as discussed in Section 2.6 below. If possible, three sediment samples will be collected as follows:

(1) Catch basin nearest Ley Creek,
(2) The end point of the discharge pipe, and
(3) In Ley Creek immediately downstream of the discharge point.

If possible, these sediment samples will be collected using hand trowels, hand augers, dedicated sampling tools or other suitable sampling device depending on field observations associated with these features. Sample material for VOC analysis will be transferred directly into the sample containers. The remaining sample material will be homogenized and transferred into the remaining sample containers. These sediment samples will be analyzed for VOCs, SVOCs, TAL metals, cyanide and pesticides/PCBs, as discussed above.

2.6 SURVEYING

Upon completion of all field tasks, the horizontal and vertical locations of all test pits, monitoring wells and surface water/sediment sampling points will be surveyed by a New York State (NYS) licensed land surveyor. Vertical elevations will be recorded to the nearest 0.01-foot. Top-of-casing elevations for each monitoring well will also be recorded to the nearest 0.01-foot. All sampling points will be referenced to an onsite fixed datum point.

3.0 DATA EVALUATION

Sampling results will be used to estimate the nature and extent of detected analytes in soils, sediment, surface water and groundwater within the proposed work areas.

Soil sampling results will be compared to the recommended soil cleanup objectives stated in New York State Department of Environmental Conservation (NYSDEC) Technical and Administrative Guidance Memorandum HWR-94-4046 (TAGM 4046).

Groundwater sampling results will be compared to the water quality standards and guidance values stated in the NYSDEC Division of Water Technical and Operational Series 1.1.1 (TOGS) titled Ambient Water Quality Standards and Guidance Values. The values are derived from 6 NYCRR Parts 700-705, Water Quality Regulations.

4.0 DOCUMENTATION PROCEDURE

The contractor will maintain complete documentation of all project activities so that decision processes, actions and results can be recreated as needed. As such, a history of the project will be maintained. Documentation of the activities for various aspects of the project will be accomplished as presented below.

Field Activities

Field Notebook – The contractor will maintain a bound field notebook that will document dates, times and duration of all field activities. The field notebook will be maintained by the Site Manager. All notebook entries will be made in ink on consecutive pages.

Photographs - Photographs will be taken of all significant site activities.

Weekly Reports - The daily field reports will be summarized on weekly report forms that will be supplied to the Project Manager. Copies of the weekly reports will be issued to the NYSDEC representative as part of the monthly report.

Calibration Records - Calibration activities for all field instrumentation will be maintained in the field notebook.

Geologic Logs - Observations pertaining to site geology made during all sub-surface drilling or excavations activities will be recorded in the field notebook.

Safety Forms - Sign-in forms, levels of personal protection, air-monitoring results, incidents reporting forms and other safety-related forms will be maintained in the field notebook, as necessary.

Environmental Sampling

Chain-of-Custody Forms - All sample handling will be recorded on chain-of custody forms and associated labels.

Management Reports

Corrective Action - All corrective action measures will be documented on the appropriate form and noted in the field notebook.

Monthly Reports - Monthly reports will be completed and will include all pertinent forms (e.g., Corrective Action, Incident Reports). Monthly reports will be prepared in accordance with the requirements of the PSA Administrative Consent Order with NYSDEC.

Final Report

A final PSA report summarizing all site activities will be prepared upon completion of the project. This report will certify that the work was performed in accordance with the Work Plan and Sampling Plans. The final PSA Report will be prepared as required by the PSA Administrative Consent Order with NYSDEC.

APPENDIX A

GENERAL SAMPLING PROCEDURES FOR FIELD INVESTIGATION

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GENERAL SAMPLING PROCEDURES

1.0 INTRODUCTION

During the course of the PSA, the applicable procedures listed below will be followed for sample collection:

- Accurate and detailed field notes will be maintained including detailed descriptions of sample collection and handling procedure and sample characteristics.
- Sampling procedures will be performed with the overall intent of collecting representative samples and minimizing sample disturbance.
- Laboratory-supplied sample bottles (pre-preserved as applicable) will be labeled with the sample location, identification number, and date and time of sampling prior to being filled with sample material.
- All sample collection, handling and shipping information will be recorded in the field notebook and chain of custody documents as appropriate.

2.0 GENERAL SAMPLE COLLECTION PROCEDURES

All non-dedicated sampling equipment will be suitably cleaned before entry to the Site, between sampling locations and intervals, and prior to departure from the site.

1. All samples containers will be labeled with: 1) site name; 2) project number; 3) sample number; 4) sample interval (for soil samples); 5) date; 6) time of collection; and 7) initials of sampler.
2. The sample collector will record descriptions of soil samples as to 1) soil type; 2) color; 3) odor; 4) moisture content; 5) texture; 6) grain size, shape and angularity; 7) consistency; and 8) any other observations, particularly relating to waste materials or unnatural materials. For water samples, the sample collector will describe 1) color; 2) odor; 3) visual turbidity; and 4) any observed phase separation.

3. Sample containers will be capped immediately after filling and placed into a chilled cooler containing sufficient ice or cold packs to cool the samples to 4°C for transport to the laboratory.
4. All equipment used to collect samples for analysis will be either decontaminated before each use at a particular sample location or will be dedicated/disposable such that decontamination will not be required.

2.1 MATERIALS

The following materials will be available during sampling activities:

- Health and safety equipment (PPE, PID, etc.);
- Sample retrieval device (trowel, bailers, spoons, etc.);
- Stainless steel spatulas, bowls and scoops;
- Polyethylene sheeting;
- Sample containers and chain-of-custody forms;
- Transport container with cold source (i.e., cooler with ice or cold packs);
- Field notebook;
- Decontamination supplies; and
- Aluminum foil and Zip-lock type bags.

3.0 SOIL/SEDIMENT SAMPLE COLLECTION PROCEDURES

The applicable procedures noted below will be followed during collection of soil and sediment samples:

1. Soil and sediment samples will be collected using dedicated sampling equipment or a trowel or stainless steel spoon. Other equipment used during sampling such as bowls and mixing spoons will likewise be made of stainless steel.
2. All samples will be screened immediately upon sample retrieval with a photoionization detector (PID). Next, samples for volatile analysis will be collected directly from the sampling tool into the appropriate containers in a manner that minimizes headspace. All remaining sample material will then be homogenized using the coning and quartering method. This method includes removing any debris not considered part of the sample, thoroughly mixing the sample in the center of a decontaminated stainless steel pan or bowl, then quartering and mixing the individual sample corners. The entire sample will be rolled to the center of the pan followed by a final mix. Sample collection will be conducted after homogenization. Soil samples will not require preservation except for maintaining the media to approximately 4°C.
3. With respect to sediment samples, any free liquid will be decanted and visually inspected for any sheen or other evidence of potential contamination. After the liquid is decanted, samples will be collected and maintained as described above.

4.0 SURFACE WATER SAMPLE COLLECTION PROCEDURES

Sampling methods will utilize the simplest sampling method that will yield representative surface water samples. Surface water samples will be collected at each location by dipping the laboratory supplied sample container into the creek with the mouth of the container facing upstream. Care will be taken to not overfill the bottles during sample collection thereby ensuring proper sample preservation.

4.1 MATERIALS

The following materials will be available for surface water sampling activities.

- A pH meter (if needed);
- Temperature, water level, conductivity meter;

- Sample bottles/labels;
- Chain-of-custody forms;
- Thermally insulated container with cold source;
- Sample preservation (may be added to bottle by analytical laboratory);
- A 0.45 micron polypropylene filter (for dissolved metals samples);
- Field book;
- PPE as needed (gloves, etc.); and

4.2 *SURFACE WATER SAMPLING PROTOCOL*

Surface water sampling protocol is described below.

- Surface water samples will be collected from the most downstream location to the most upstream to minimize disturbance of downstream samples.
- Surface water samples will not be collected from stagnant waters.
- Surface water samples may be collected directly into the appropriate sample containers or be collected with dedicated or decontaminated sampling equipment and transferred to the sampling containers.
- VOC samples will be collected in 40 ml glass vials with zero headspace and will be measured by the laboratory, with hydrochloric acid to a pH of less than two (in accordance with the instructions provided in the Region II CERCLA QA Manual, Revision 1, October 1989, p. 31). The sample bottles for all other analytical parameters will be properly preserved in the laboratory prior to sample collection. Care will be taken to not overfill the bottles during sample collection, thereby ensuring proper sample preservation.
- Field parameters (temperature, conductivity, pH, and dissolved oxygen) along with observations (depth, flow rate, color and odor) will be measured and recorded.
- Sample containers will be capped immediately after filling and placed into a chilled cooler for transport to the laboratory.

- Sampling will be stored on ice and transported to the laboratory under the proper chain-of-custody.

5.0 GROUNDWATER SAMPLE COLLECTION PROCEDURES

Purging and sampling methods will utilize the simplest sampling method that will yield representative groundwater samples. In each case, the well purging method will be consistent with the well development method. Disposable bailers may be used to collect groundwater samples. Disposable/dedicated polypropylene rope will be used to suspend the bailer.

Prior to sampling, all wells will be purged of at least three casing volumes. Wells with low recovery rates will be evacuated to near dryness once and allowed to recover sufficiently for samples to be collected. Wells with low recovery rates will be characterized as those wells where bailing at a slow but steady rate (1000 ml/min) dewaters the well. All measuring equipment will be cleaned between uses and properly calibrated.

5.1 MATERIALS

The following materials will be available for groundwater sampling activities.

- Water level indicator (accurate to 0.01 foot);
- New dedicated bailers;
- Polypropylene/nylon rope;
- One-liter beaker (for dissolved metals samples);
- A dissolved oxygen flow cell;
- An Oxidation-Reduction Potential (ORP) meter;
- A pH meter (if needed);
- Temperature, water level, conductivity meter;
- PID;
- Sample bottles/labels;

- Chain-of-custody forms;
- Thermally insulated container with cold source;
- Sample preservation (may be added to bottle by analytical laboratory);
- A 0.45 micron polypropylene filter (for dissolved metals samples);
- Field book;
- PPE as needed (gloves, etc.); and
- Decontamination supplies (detergent, water, hexane, methanol and/or nitric acid rinses (if necessary), buckets, brushes, etc.).

5.2 GROUNDWATER SAMPLING PROTOCOL

Groundwater sampling protocol is described below.

- Open well casing and monitor headspace for VOCs. If greater than 5 ppm detected, allow well to vent for 5 to 10 minutes. Re-measure headspace for VOCs. If sustained readings of 5 ppm or greater are present, a respirator with organic vapor cartridges is to be donned and worn throughout the remaining steps of this procedure. Record PID readings in field book.
- A water level indicator will be used to accurately measure the depth to groundwater from a surveyed datum on the top of the PVC well casing. This measurement will be used in conjunction with the total depth of the well to calculate the standing volume of water in the well as well as to establish the water table elevation for groundwater flow direction purposes.
- A minimum of three well volumes will be purged from each well prior to sampling. The well purging method will be consistent with the well development method. Measurement of temperature, pH, and conductivity will be made and recorded in the field book along with the actual volume removed. Wells with low recovery rates will be evacuated to near dryness once, then allowed to recover sufficiently for samples to be collected. Wells with low recovery rates will be characterized as those wells where bailing at a slow but steady rate (1000 ml/minute) dewaters the well.

- A clean, dedicated, disposable bailer will be attached to a new dedicated polypropylene or nylon rope for sample collection purposes. Both the rope and the bailer will be properly discarded upon completion of the well sampling event.
- Within eight hours of purging or as soon as the well has sufficiently recovered from purging to fill a bailer, a groundwater sample will be collected for VOC analysis (if required). Care will be taken not to agitate the sample when transferring it from the bailer to the laboratory-supplied vials. Samples for any additional parameters will be collected subsequent to the VOC samples. Assuming adequate recharge, all samples will be collected within eight hours of purging.
- VOC samples will be collected in 40 ml glass vials with zero headspace and will be preserved by the laboratory with hydrochloric acid to a pH of less than two (in accordance with the instructions provided in the Region II CERCLA QA Manual, Revision 1, October, 1989, p. 31). The sample bottles for all other analytical parameters will be properly preserved in the laboratory prior to sample collection. Care will be taken to not overfill the bottles during sample collection thereby ensuring proper sample preservation.
- Total metals samples (if needed) will be collected after the well has recovered sufficiently to allow for a sample with minimal turbidity. Total metals samples will be collected by gently lowering the bailer into the well to minimize disturbance to the water column.
- Dissolved metals samples (if required) will be field filtered using a disposable, polypropylene, in-line 0.45-micron filter. Filtering will be conducted immediately after dissolved metals sample collection. Approximately 500 ml of the sample is transferred to a clean 500-ml beaker. The sample is then passed through the polypropylene in-line filter described above via pumping through Teflon® tubing.
- Sample containers will be capped immediately after filling and placed into a chilled cooler for transport to the laboratory.
- Sampling will progress from the least contaminated well to the most contaminated well, based on the results of previous sampling and analysis. Samples will be

properly preserved, stored on ice and transported to the laboratory under the proper chain-of-custody.

ATTACHMENT 3

QUALITY ASSURANCE PROJECT PLAN

InteGreyted
International

COOPER INDUSTRIES, INC.

ATTACHMENT 3
QUALITY ASSURANCE PROJECT PLAN
NORTH AND SOUTH LANDFILLS
CROUSE-HINDS FACILITY
SYRACUSE, NEW YORK

9 JANUARY 2004

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1.0 *INTRODUCTION*

This document represents the Quality Assurance Project Plan (QAPP), which is Attachment 2 of the Preliminary Site Assessment (PSA) Work Plan for the Cooper Industries, Inc., Crouse-Hinds Facility Landfills (i.e., North and South Landfills) site located in the Town of Salina, New York (hereinafter the "Site"). This Quality Assurance Project Plan describes the field and laboratory Quality Assurance and Quality Control measures to be implemented during the project.

2.0 *SITE GOALS*

As described in the PSA Work Plan, the goals of the PSA are to estimate the nature and extent of any impacted soil, groundwater, surface water and/or sediment at the Site.

Prior work at the Site has included soil, surface water and groundwater sampling to identify potential constituents of concern at the Site. Pending site activities will consist of drilling, test pit excavation, monitoring well installations and multi-media sampling.

3.0 QUALITY ASSURANCE OBJECTIVES

3.1 DATA QUALITY OBJECTIVES

Data Quality Objectivies (DQOs) are based on the concept that various uses of data collected during the PSA require varying degrees of data quality. Data quality is defined as the degree of certainty in a data set with respect to precision, accuracy, representativeness, completeness and comparability (PARCC). DQOs are qualitative and quantitative statements specifying the required quality of data necessary to support PSA activities. These activities include site screening and site characterization. A description of PARCC parameters is described below.

Precision is a measure of mutual agreement among individual measurements of the same property, usually under prescribed similar conditions. Precision is best expressed in terms of the standard deviation. Various measures of precision exist depending upon the "prescribed similar conditions".

Accuracy is the degree of agreement of a measurement (or an average of measurements) with an accepted reference or "true value". Accuracy is one estimate of the bias in a system.

Representativeness expresses the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition.

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount expected to be obtained under correct normal conditions.

Comparability expresses the confidence with which one data set can be compared to another data set.

It is the responsibility of the field team to collect representative and complete samples. It is the responsibility of the analytical laboratory to analyze these samples using accepted protocols resulting in data that meet PARCC standards.

The categories of data quality to be utilized during the Site Investigation at the subject site are consistent with those outlined in the USEPA Guidance document entitled *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA*, dated October 1988, and are described below.

- DQO Level 1 - Field Screening Utilizing Portable Instrumentation: Data used for site health and safety monitoring and field screening during site characterization activities. The data generally determines the presence or absence of certain constituents and is generally qualitative rather than quantitative. Field screening data provides the lowest data quality.

- DQO Level 2 - Field Laboratory Analysis: Data used for field screening during site characterization activities, evaluation of remedial alternatives, engineering design and monitoring during implementation of alternatives. The data generally determines levels of certain constituents relative to a calibration standard and is generally qualitative or quantitative.

- DQO Level 3 – Engineering Level Data: Data used for site characterization, risk assessment, evaluation of alternatives, engineering design and monitoring during implementation of alternatives. The data is quantitative and is generated using EPA analytical laboratory procedures, however, it does not include full Contract Laboratory Protocol (CLP) documentation.

- DQO Level 4 - Laboratory Analysis: Data used for risk assessment, evaluation of alternatives and engineering design. The data is quantitative and is generated using EPA analytical laboratory procedures. All analyses require full Analytical

Services Protocol (ASP)/CLP analytical protocols including Data Usability Summary Reports (DUSR). The majority of the data generated during the Site Investigation will be DQO Level 4.

- DQO Level 5 – Non-Standard Special Analytical Services: Data for use when analysis by non-standard procedures is required to obtain specific or lower detection limits or analyses are not of a nature typically performed under the CLP Routine Analytical Service (RAS) Program.

DQOs have been developed for the tasks outlined in the PSA Work Plan. During the PSA process, it is anticipated that DQO Levels 1 and 4 will primarily be utilized.

DQO Level 1 data (field screening) will be generated during site characterization activities including: head space screening of soil samples; health and safety monitoring; and collection of groundwater parameters.

DQO Level 2 data (field analysis), DQO Level 3 data (engineering) and DQO Level 5 (non-standard) data are not expected to be generated as part of the PSA activities. However, these data at these DQO levels may be generated during a Supplemental Investigation, if required.

DQO Level 4 data (laboratory analysis) will be generated during site characterization activities including: soil sampling and analysis; sediment sampling and analysis, surface water sampling and analysis; and groundwater sampling and analysis.

3.2 *FIELD SAMPLING QUALITY OBJECTIVES*

The objectives with respect to field sampling activities are to maximize the confidence in the data in terms of PARCC. Field Internal Quality Control Checks will be utilized during this investigation through the use of field duplicates as presented below.

Field Duplicates – At a minimum, one of every twenty samples collected in the field will be accompanied by a duplicate sample. The duplicate will be prepared by homogenizing the sample and preparing two identical sample aliquots for analysis (grab samples will be used for VOC analysis). The duplicate sample will be assigned a fictitious sample number, which will be recorded in the field notebook. Analysis of duplicate samples will determine the precision of the analytical techniques.

Precision will be calculated as relative percent difference (RPD) if there are only two analytical points, and percent relative standard deviation (%RSD) if there are more than two analytical points. Through the submission of field QC samples, the distinction may be made between analytical problems, sampling technique considerations, and sample matrix variability. This distinction will be made by the data reviewer based on industry guidelines and personal judgment.

To assure representativeness, a field sampling plan has been devised that estimates the number of samples to be collected. This plan is presented in the project Sampling and Analysis Plan (SAP). The data quality objective for the completeness of all data to be collected during the investigation is 100%. In other words, the objective is to collect samples from all of the locations noted in the SAP (Attachment 2 to the PSA Work Plan). In the event 100% is not obtained due to inaccessibility of sampling points or other field conditions, the effect that the missing data will have on the projects objectives will be evaluated. If necessary, corrective action will be initiated to resolve any data gaps that develop as a result of less than 100% data completeness. Every effort will be made to obtain valid data for all sampling points, particularly those identified by the Site Manager as critical points. In this regard, the sampling points identified as critical will be selected for QC sampling (duplicate sample collection) at the frequency specified.

In order to establish a degree of comparability, such that observations and conclusions can be directly compared with all historical data, standardized methods of field analysis, sample collection, holding times, sample preservation and standard units of measurement for data will be used. In addition, field conditions will be documented and considered when evaluating data to determine the effects of sample characteristics on analytical results. Whenever possible, the same sampling team will obtain all samples to reduce inconsistencies which may be caused by technique and time variables.

3.3 *LABORATORY DATA QUALITY OBJECTIVES*

The laboratory will demonstrate analytical precision and accuracy by the analysis of laboratory duplicates and by adherence to accepted manufacture and procedural methodologies.

The performance of the laboratory will be evaluated by the Project Manager and Project Quality Assurance Officer during data reduction. The evaluation will include a review of all deliverables for completeness and accuracy when applicable.

4.0 QUALITY CONTROL PROCEDURES

This section presents a general overview of the quality assurance and quality control procedures that will be implemented during the investigation. These quality control procedures are to be implemented as follows:

- at the factory for certain manufactured products;
- in the field; and
- in the laboratory utilized for selected sample analyses.

4.1 SAMPLING ACTIVITIES

Sampling and analysis will be conducted to characterize the Site. General field sampling procedures are described in Appendix A of the SAP. Samples will be handled by all field and laboratory personnel in a manner, which allows for custody tracking and maintenance of the validity of the samples. Sample custody procedures are presented as Appendix A of this QAPP.

All sampling equipment, field measuring equipment and heavy equipment will be decontaminated according to the decontamination procedures presented in Appendix B of this QAPP.

All field activities will be documented in accordance with Appendix C of this QAPP.

5.0 CALIBRATION PROCEDURES

Laboratory calibration and frequency for specific analytical methods and pieces of equipment are specified in USEPA SW846 and the laboratory's Standard Operating Procedures.

During the course of this investigation, soil samples may be screened with a photoionization detector (PID) in the field. A maintenance, calibration, and operation program will be implemented to ensure that routine calibration and maintenance is performed on all field instruments. The O&M program will be monitored by the Site Manager. Trained team members will perform scheduled calibration, field calibrations, checks, and instrument maintenance prior to use each day. Additionally, calibration will be checked as necessary to ascertain that proper measurements are being taken.

Team members are familiar with the field calibration, operation, and maintenance of the equipment, and will perform the prescribed field operating procedures outlined in the operation and field manuals accompanying the respective instrument. Field personnel will keep records of all field instruments calibrations and field checks in the field logbooks. Calibration information recorded in field logbooks will include date, time, instrument model and serial number, a description of calibration or field check procedure, and any instrument deviations.

If on-site monitoring equipment should fail, the Site Manager will be contacted immediately. Replacement equipment will be provided or the malfunction will be repaired in a timely fashion.

6.0 *ANALYTICAL PROCEDURES AND DATA EVALUATION*

PSA activities will include sample collection and analysis for some or all of the following analytes: Volatile Organic Compounds (VOCs), Semi-volatile organic compounds (SVOCs), cyanide, phenols, target analyte list (TAL) metals and/or pesticides/PCBs. Surface and subsurface soil samples will be collected along with sediment, surface water and groundwater samples as part of this PSA. In general, laboratory analytical procedures will adhere to NYS ASP 2000 and/or to USEPA SW-846 methodologies as appropriate. The laboratory will adhere to the requirements of NYS ASP 2000 in conjunction with the CLP. Samples will be analyzed by a laboratory that is a NYSDOH ELAP certified laboratory that participates in the CLP and is experienced in performing ASP analyses.

A summary of the sampling program and analytical methods are shown in Table 6-1.

Upon receipt of analytical reports from the laboratory, the data packages will be evaluated to confirm that samples were analyzed within required holding time and at proper detection limits. Data validation will be conducted for all samples analyzed in accordance with ASP methodologies. The laboratory will provide ASP 2000 category B QA/QC backup for data packages with all confirmation sampling analytical reports (excluding and TCLP analyses and material characterization analyses). These packages will be reviewed for completeness and provided upon request.

Table 6-1
PSA Sampling Program

Task	Matrix	VOCs (EPA Method 8260)	SVOCs (EPA Method 8270)	Pesticides /PCBs (EPA Method 8080)	TAL Metals	Cyanide	Phenols
Soil Samples							
Test Pits (19 total)	Soil	19	19	19	19	19	NA
Surface Soil Samples (10 total)	Soil	10	10	10	10	10	NA
Duplicates (1 per 20)	Soil	2	2	2	2	2	NA
MS/MSD (1 set per 20)	Soil	2 sets	2 sets	2 sets	2 sets	2 sets	NA
Total Soil Samples	Soil	35	35	35	35	35	NA
Sediment Samples							
Sediment Samples (Ley Creek)	Sed	4	4	4	4	4	NA
Storm Sewer*	Sed	3	3	3	3	3	NA
Duplicates (1 per 20)	Sed	1	1	1	1	1	NA
MS/MSD (1 set per 20)	Sed	1 set	1 set	1 set	1 set	1 set	NA
Total Sediment Samples*	Sed	7	7	7	7	7	NA
Water Sampling							
Existing Wells	GW	14	14	14	14	14	14
New Wells	GW	5	5	5	5	5	5
Surface Water Samples	SW	4	4	4	4	4	4
Duplicates (1 per 20)	GW/SW	2	2	2	2	2	2
MS/MSD (1 set per 20)	GW/SW	2 Sets	2 sets	2 sets	2 sets	2 sets	2 sets
Trip Blank	Water	2	NA	NA	NA	NA	NA
Total Water Samples	GW	31	29	29	29	29	29

Notes:

NA: Not Analyzed

* : As many as three additional sediment samples may be collected depending on the results of the storm sewer assessment. These samples have not been included in the sediment sample total. Should the storm sewer be located during the PSA, up to three additional sediment samples will be collected. If collected, these samples will be included in the sample delivery group with the Ley Creek sediment samples such that additional QA/QC samples will be necessary.

1: The method quantification limits will be the lowest as required by the method.

2: The actual detection limit will be dependent upon the sample matrix.

3: Holding times, sample preservatives and sample containers will be specified by the analytical method.

The project Quality Assurance/Quality Control (QA/QC) officer will review the data packages to confirm completeness of the ASP Category B deliverables and to prepare a Data Usability Summary Report (DUSR) in accordance with NYSDEC guidelines. The QA/QC officer will be independent from the analytical laboratory. At a minimum, the following information will be evaluated:

- chain-of-custody forms;
- date sampled/date analyzed;
- sample temperature at check-in;
- raw data;
- initial and continuing instrument calibrations;
- matrix spikes;
- laboratory duplicate analyses;
- surrogate recoveries (organics); and
- laboratory control samples (inorganics).

Data reduction will consist of presenting analytical results on summary tables. Data resulting from investigation analyses will then be used to characterize the various environmental media at the Site and to define the extent of any impacted medium.

7.0 *PROJECT PERSONNEL*

This Work Plan was prepared by a project team from InteGreyted International, LLC (InteGreyted) with extensive experience in site investigation and remediation, site development and construction management.

This PSA will be implemented by a project team with extensive experience in site investigations, site remediation, and site development and construction management. The project team will consist of individuals from InteGreyted. The project team will be responsible for implementation of the PSA Work Plan. Key personnel to be assigned to this project, and their project role, will be provided prior to the start of work; professional profiles for these persons will also be provided prior to the start of work.

The laboratory analytical contractor will be a NYSDOH-certified laboratory with ASP/CLP experience to be selected upon completion and approval of the PSA Work Plan. Site contractors will be selected upon completion and approval of the PSA Work Plan.

8.0 SCHEDULE

The estimated work schedule is presented in Section 6.0 of the PSA Work Plan document. A start date will be established based on finalization of the Work Plan.

APPENDIX A

SAMPLE CUSTODY PROCEDURES

SAMPLE CUSTODY PROCEDURES

The primary objective of the sample custody procedures is to create an accurate written record which can be used to trace the possession and handling of all samples from the moment of their collection, through analysis, until their final disposition. For the purpose of this document, the USEPA Office of Enforcement and Compliance Monitoring, National Enforcement Investigation Center (NEIC) Policies and Procedures (May 1986) definition of custody applies. USEPA states that a sample is under custody if:

1. It is in one's possession, or
2. It is in one's view, after being in one's possession, or
3. It is locked up after being in one's possession, or
4. It is in a designated secure area.

The Site Manager or the field personnel collecting the samples will maintain custody for samples collected during this investigation. The Site Manager or field personnel are responsible for documenting each sample transfer and maintaining custody of all samples until they are shipped to the laboratory.

A self-adhesive sample label will be affixed to each container before sample collection. These labels will be covered with clear waterproof tape if necessary to protect the label from water or solvents. The sample label will contain the following information:

- Laboratory Name
- Sample ID Number
- Sample Location
- Sample Matrix
- Date and Time of Sample Collection

- Designation as grab or composite
- Parameters to be tested
- Preservative Added
- Name of Sampler.

All sampling containers will be supplied by the laboratory, and are to be cleaned by the bottle supplier in accordance with standard laboratory procedures. Analytical proof of cleanliness will be available for review. Sample containers will be enclosed in clear plastic bags and packed with cushioning material (e.g. vermiculite) inside the coolers.

The Site Manager will maintain custody of the sample bottles. Sample bottles needed for a specific sampling task will be properly preserved in the laboratory prior to sample collection. After the Site Manager has verified the integrity of the bottles and that the proper bottles have been assigned for the task, the bottles will be relinquished to the sampling team. The sampler will place a sufficient volume of sample in the appropriate laboratory-grade bottles for use as sample containers. Care will be taken to not overfill the bottles during sample collection, thereby ensuring proper sample preservation.

The samples collected for analyses will be stored in an insulated cooler for shipment to the laboratory. The laboratory should receive the samples within 48 hours of sampling. Field chain-of-custody records completed at the time of sample collection will be placed inside the cooler for shipment to the laboratory. These record forms will be sealed in a zip-lock type plastic bag to protect them against moisture. Each cooler will contain sufficient ice or cold packs to insure that an approximate 4^0C temperature is maintained, and will be packed in a manner to prevent damage to sample containers. Sample coolers will be sealed with nylon (Why specify??) strapping tape and the Site Manager will sign and date a custody seal and place it on the cooler in such a way that any tampering during shipment will be detected.

All coolers will be shipped by an overnight courier according to current US DOT regulations. (If lab is in Syracuse, we won't have to do this – could be hand delivered or have lab personnel pick up) Upon receiving the samples, the sample custodian at the laboratory will inspect the condition of the samples, compare the information on the sample labels against the field chain-of-custody record, assign a laboratory control number, and log the control number into the computer sample inventory system. The sample custodian will then store the sample in a secure sample storage cooler maintained at approximately 4°C and maintain custody until the sample is assigned to an analyst for analysis. Custody will be maintained until disposal of the analyzed samples.

The sample custodian will note any damaged sample vials, void space within the vials, or discrepancies between the sample label and information on the field chain-of-custody record when logging the sample. This information will also be communicated to field personnel so proper action can be taken. The chain-of-custody form will be signed by both the relinquishing and receiving parties and the reason for transfer indicated each time the sample custody changes.

An internal chain-of-custody form will be used by the laboratory to document sample possession from laboratory sample custodian to analysts and final disposition. All chain-of-custody information will be supplied with the data packages for inclusion in the document control file.

APPENDIX B

DECONTAMINATION PROCEDURES

DECONTAMINATION PROCEDURES

1.0 INTRODUCTION

Decontamination of all field investigation and sampling equipment will follow guidelines established in the USEPA Region II CERCLA Quality Assurance Manual, Final Copy, October 1989, and specific decontamination procedures detailed below.

Equipment cleaning areas will generally be established within or adjacent to the specific work area. The equipment cleaning procedures described below include pre-field, field and post-field cleaning of sampling equipment. The equipment consists of soil sampling equipment. The non-disposable equipment will be cleaned after completing each sampling event. All rinse water will be contained and treated on site or sent to an approved disposal facility. The site manager will monitor cleaning procedures.

All solvents and water used in the decontamination process will be contained and collected for characterization and proper disposal. Solids (e.g., disposable gloves, disposable clothing, and other disposable equipment) generated from personnel cleaning procedures will be collected for proper disposal. Decontamination procedures will be fully documented in the field notebook.

2.0 SAMPLING EQUIPMENT DECONTAMINATION

Typical sampling equipment cleaning materials may include:

- phosphate-free detergent solution soap;
- potable water (which will be obtained from a treated municipal water source);

- appropriate cleaning solvent (e.g., dilute nitric acid, pesticide grade hexane or methanol);
- wash basins;
- brushes;
- polyethylene sheeting;
- aluminum foil;
- large heavy duty garbage bags;
- spray bottles;
- zip-lock type bags;
- paper towels/Handiwipes®; and
- non-phthalate, latex, disposable gloves (surgical gloves). Note: These gloves will also be worn by the sampling team and changed between sample points.

All sampling equipment will be stored in a clean environment and, where appropriate, the equipment will be covered in aluminum foil.

Field decontamination procedures, as described below, will include the establishment of cleaning stations. These stations will be located away from the immediate work area so as not to adversely impact the cleaning procedure, but close enough to the sampling teams to keep equipment handling to a minimum.

A designated area will be established to conduct large scale cleaning. All equipment such as drill rigs and excavation equipment will be inspected to determine if an initial cleaning at this location prior to use on-site is needed. The frequency of subsequent on-site cleaning will depend on actual equipment use in the collection of environmental samples or during remedial activities. All fluids and residues produced from the decontamination procedures will be collected and stored on-site until analyses can be conducted and a decision regarding final disposition of the materials is made pursuant to state and federal requirements.

All sampling equipment (e.g. hand-operated coring devices, knives, hand-augers, bowls) will be cleaned before each use. The field sampling equipment-cleaning procedure when analyzing for organic constituents is as follows:

- Phosphate-free detergent solution;
- Potable water rinse;
- Deionized water rinse;
- Repeat water rinse twice (i.e., triple rinse) and allow to air dry; and
- Wrap equipment completely with aluminum foil to prevent contact with other materials during storage and/or transport to the sampling location.

The initial step, a soap and water wash, is to remove all visible particulate matter and residual oils and grease (this may be preceded by a steam cleaning to facilitate residuals removal). When analyzing for organic constituents when tools appear heavily contaminated, this may be followed by a potable water rinse to remove the detergent and a rinse sequence of solvent (e.g., hexane, and methanol) and deionized water

All heavy equipment (drill rigs, excavator, etc.) will be steamed cleaned between locations if the equipment comes in direct contact with contaminated media. All down-hole equipment (augers and buckets) will be steam-cleaned between uses at each location. Equipment will be scrubbed manually as needed to remove heavy soils prior to steam cleaning. Clean equipment will be stored in an in-active work area on-site until use.

3.0 METER AND FILTER DECONTAMINATION

All meters and probes used in the field will be decontaminated between uses with deionized water (triple rinse).

Filtering apparatus will be cleaned prior to each use by washing with a phosphate-free detergent solution, rinsing with potable water and a final rinse with deionized water. Following sample collection the used filter will be properly disposed.

Sampling equipment and probes will be decontaminated in an area covered by polyethylene sheeting near the sampling location.

APPENDIX C

FIELD DOCUMENTATION

FIELD DOCUMENTATION

All the field data, such as those generated during field measurements, observations and field instrument calibrations, will be entered directly into a bound field notebook. Each project team member will be responsible for proofing all data transfers made, and the Site Manager will proof at least ten percent of all data transfers.

One or more bound field notebooks may be maintained for the Site; each book will be consecutively numbered. The book(s) will remain with the site evidence file.

All entries in the Logbook will be made in ink. Logbook entries will include but not be limited to the following:

First Page:

- site name and number
- date and time started
- personnel on-site

Subsequent Pages:

- detailed description of investigative activities including sampling, on-site meetings and any problems encountered along with the duration of these activities
- documentation of all personnel monitoring results (e.g. PID readings)
- list of all samples obtained and sample appearance (referenced to field logs if necessary)
- list of personal protection used and documentation procedure
- all other pertinent daily activities

Each new day will contain:

- date and time started
- weather
- personnel on-site
- activity information
- initials of notekeeper

*Note: When a mistake is made in the log, it will be crossed out with a single ink line and will be initialed and dated.

Special care will be taken in the description and documentation of sampling procedures. Sampling information to be documented in the field notebook and/or associated forms are as follows:

- sample number
- date and time sample collected
- source of sample (Area, monitoring well number, etc.)
- location of sample - document with a site sketch and/or written description of the sampling location so that accurate resampling can be conducted if necessary
- sampling equipment (trowel, split spoon, sediment corer, etc.)
- analysis and QA/QC required
- chemical preservative used (HCl, HNO_3, H_2SO_4, $NaOH$, etc.)
- field instrument calibration including date of calibration, standards used and their source, results of calibration and any corrective actions taken.
- field data (pH, temperature, conductivity, etc.)
- field observations - all significant observations will be documented.
- sample condition (color, odor, etc.)
- site condition (stressed vegetation, exposure of buried wastes, erosion problems, etc.)

- sample shipping procedure, date, time, destination and if container seals were attached to transport container(s)
- comments - any observation or event that occurred that would be relevant to the facility; for example: weather changes and effect on sampling, conversations with the client, public official or private citizen; and instrument calibration, equipment problems, and field changes.

ATTACHMENT 4

HEALTH AND SAFETY PLAN

InteGreyted
International

COOPER INDUSTRIES, INC.

ATTACHMENT 4
HEALTH AND SAFETY PLAN
NORTH AND SOUTH LANDFILLS
CROUSE-HINDS FACILITY
SYRACUSE, NEW YORK

9 JANUARY 2004

Prepared for:

Cooper Industries, Inc.
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Project No. 0310025P

HEALTH AND SAFETY PLAN

PREPARED BY: Stephen O. Valentine, CIH
InteGreyted International, LLC

APPROVED BY:

______________________________________ Date:________

Health and Safety Officer

______________________________________ Date:________

Project Manager

______________________________________ Date:_______

Site Manager

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1.0 INTRODUCTION

This document represents the Health and Safety Plan (HASP), which is Attachment 4 of the Preliminary Site Assessment (PSA) Work Plan prepared for the Cooper Industries, Inc., Crouse-Hinds Facility landfills (i.e., North and South Landfills) in Syracuse, New York.

This HASP summarizes the intended field activities at the Site and chemicals of concern expected to be present. The HASP then describes the procedures to be followed in conducting the field operations, given the existing data concerning the Site.

2.0 *FIELD ACTIVITIES AND CHEMICALS OF CONCERN*

A description of the field activities to be conducted is described in the associated Sampling and Analysis Plan (SAP). Planned Site activities include well drilling and soil borings, test pit excavation and multi-media sampling. Site activities are planned for the spring of 2004.

Previous (1983) investigative activities at the Site have identified cyanide, phenols, and volatile organic compounds (VOCs), specifically, benzene, toluene and xylene, as the primary chemicals of concern. Concentrations of these compounds detected in groundwater were as follows:

• Benzene	<1 - 220 ppb
• Toluene	<1 - 33 ppb
• Xylene	<1 - 270 ppb
• Phenols	<10 - 262 ppb
• Cyanide	<4 - 32 ppb

3.0 POTENTIAL CHEMICAL AND PHYSICAL HAZARDS

VOCs, cyanide and phenols are the main compounds of concern that may be present at the Site. Since the field activities involve subsurface disturbance, inhalation (volatiles and dust particles), dermal contact and ingestion are considered the potential pathways of concern.

Since the levels of exposure are considered low, general exposure assumptions are being made to address compliance with OSHA permissible exposure limit (PEL). For VOCs, cyanide and phenols, the exposure limit being used is 25 ppm (as a total VOC level). The PEL was used to develop action levels for site personnel.

Physical hazards may also be encountered at the Site, especially during drilling and excavation activities. Table 3-1 lists potential physical hazards that may be encountered during the field activities. This list has been compiled based on planned activities and potential site conditions.

Table 3-1
Physical Safety Concerns
Cooper Industries, Inc. Crouse-Hinds Facility - North and South Landfills

Hazard	Description	Location	Procedures Used to Monitor/Reduce Hazard
Underground Utilities	Electric, Gas, Sanitary and Storm Sewer	Throughout	Verify number and location of all utilities prior to site operations.
Heat Stress	Hot Weather Activities	Throughout	Protections and monitoring as designated in this HASP
Cold Weather	Frost-bite, Hypothermia	Throughout	Wear appropriate clothing. Provide warm shelter area and liquids. Monitor worker physical conditions.
Heavy Equipment	Drill Rig	Select Areas	All personnel should be cautious around heavy equipment. Make eye contact with operator prior to entering the work area.
Weather	Lightning, Heavy Rain or Snow	Throughout	During lightning, cease all heavy equipment activities. During cold weather, beware of wet and slippery conditions.
Noise	Heavy Equipment	Select Areas	Use appropriate earplugs or earmuffs, during equipment operation.
Overhead Electrical Equipment	Overhead Lines	Select Areas with Heavy Equipment	Maintain at least ten feet of clearance from any overhead lines.
Struck by Vehicle	Work in Traffic Areas	Parking Lots	Block all work areas off with reflective cones.

4.0 HAZARDS EVALUATION

Details pertaining to site activities are outlined in the SAP and QAPP.

4.1 SITE MONITORING FOR CHEMICAL HAZARDS

The primary compounds of concern in the work areas are VOCs, cyanide and phenols. Air monitoring (where applicable) and good work practices will be used during the field activities to ensure that appropriate personal protection is used and to minimize potential exposures. Appropriate monitoring equipment to be used during site activities is described herein. All field monitoring will be conducted by or under the supervision of the Site Safety Officer (SSO). The SSO will properly maintain and calibrate all monitoring instruments throughout the field activities to ensure their accuracy and reliability. The SSO will keep a written record of all calibration activities.

4.1.1 Volatile Organic Compound (VOC) Monitoring

Some VOCs, cyanide and phenols have been identified in samples at the Site. Based on the activities being conducted, it is not anticipated that VOC exposure, through inhalation, will be of concern. To ensure this, monitoring will conducted during field activities.

Direct reading air monitoring for VOCs will be performed during activities involving potentially contaminated soils, as determined necessary by the SSO. Direct reading instrumentation, such as a photoionization (PID) or flame ionization (FID) detector will be utilized. Based on the exposure levels in the breathing zone of personnel, the SSO will determine if an upgrade in respiratory protection is warranted. These upgrade levels are presented in the following table.

Table 4-1
Personal Protection Action Levels - VOCs
Cooper Industries, Inc. Crouse-Hinds Facility - North and South Landfills

Total VOC Concentration (ppm)	Required Action and/or Personal Protection
Monitor during all operations with the potential to release VOCs.	
Detection Limit to 25 ppm	Level D personal protection
25 ppm to 500 ppm	Upgrade to Level C personal protection with full-face air purifying respirators with Organic Vapor cartridges. Change cartridges after each days use.
Over 500 ppm	Notify the Site Safety Officer for Level B provisions or implement means to control exposure levels.

4.1.2 Explosive Monitoring

Potentially explosive atmospheres may be generated during intrusive activities in landfills. To monitor these levels, monitoring will be conducted during field activities: trench pits and drilling.

A combustible gas meter will be used to monitor explosive atmospheres. The SSO will conduct periodic monitoring of these activities, such as every 15 minutes during intrusive work. The action levels are presented in the following table.

Table 4-2
Explosive Action Levels - LEL
Cooper Industries, Inc. Crouse-Hinds Facility - North and South Landfills

% LEL	Required Action
0% - 10%	Continuous monitoring. Work may continue.
10% - 25%	Try to determine and control exposure. Proceed with caution. Work may continue.
> 25%	STOP WORK – Potentially Explosive Atmosphere. Implement means to control levels. Work cannot resume until levels can be reduced.

4.1.3 Dust Monitoring

Some general nuisance dust may be generated during excavation activities at the site. It will be at the discretion of the SSO to determine the need for formal dust monitoring during excavation activities. Generally speaking, if continuous visible dust is being generated and is present in the employee work area, formal monitoring will be conducted. Monitoring will be conducted with a direct-reading dust monitor. The action level for general dust exposure will be 5 mg/m^3. When levels exceed this criteria, controls will be implemented to minimize dust exposure or employees will utilize Level C respiratory protection.

4.2 PHYSICAL HAZARDS

To minimize hazards, standard safety procedures will be followed at all times. The primary physical safety hazards for this project include, but are not limited to:

- common slip, trip, and fall hazards;
- overhead and buried hazards;
- drill rig and heavy equipment operation;
- excavation safety;
- electrical and power equipment;
- vehicular traffic;
- lifting excessive weights;
- sampling hazards;
- excessive noise levels;
- heat and cold stress; and
- other hazards.

4.2.1 *Common Slip, Trip, Fall Hazards*

Personnel should be aware of common slip, trip or fall hazards that are encountered frequently in industrial and project environments. Heightened awareness and emphasis on good housekeeping are the most effective ways to prevent accidents.

4.2.2 *Overhead and Buried Hazards*

Utility lines, both above and below ground, may pose a safety hazard for site personnel during soil boring or other heavy equipment operations. If overhead utilities have been identified on site as a hazard, the equipment operator must maintain a safe clearance between the lines and the equipment at all times during work operations. High voltage lines require greater clearance distances. As a safe work practice, equipment operators will maintain a 10-foot clearance between equipment and power lines or other energized sources unless the source is greater than 350 KV, in which case 29CFR 1910.180(j) must be applied. <u>The location of buried utilities lines must be determined prior to the start of work activities</u>. Overhead and buried utility and electrical lines may be a concern during all activities. These concerns will be addressed as part of the daily safety meeting.

4.2.3 *Drill Rig and Heavy Equipment Operation*

Truck-mounted drill rigs and heavy equipment presents multiple hazards while in operation. Excessive noise, boom raising, lowering and swing, cable and hook damage and operator error may result in injuries. To minimize potential accidents, the following safety measures will be required for all operations:

- All operators of equipment used on site will be familiar with the requirement for inspection and operation of such equipment. The operator will be required to demonstrate proficiency in safe operation the equipment;

- All drilling and excavation shall be performed from a stable ground position, if unable to locate on level ground, the drill rig shall be appropriately checked, blocked and braced prior to the derrick being raised;
- Daily inspections of the drilling or excavation area shall be made by a person competent in heavy equipment safety. The inspector shall note the safety of the area and confirm the location of utilities;
- Before drilling or excavation, the existence and location of utility lines (electric and gas) will be determined by the Site owner. If the knowledge is not available, an appropriate device, such as a cable avoiding tool, will be used to locate the services line(s);
- Operations must be suspended and the area evacuated if the airborne flammable concentration reaches 20 percent of the LEL in an area of an ignition source, such as an internal combustion engine or an exhaust pipe;
- Combustible gas readings of the general work area will be obtained, as required, based on the SSO's determination;
- If drilling equipment is located in the vicinity of overhead power lines, a distance of ten-feet must be maintained between the lines and any point on the equipment;
- Daily inspection of the drill rig and heavy machinery must be conducted and documented by the operator prior to each day's operation.
- In the event repairs to the drilling rig derrick are required, personnel climbing the derrick to affect such repairs must wear restraint system, including full body harness and lifeline, to prevent an accidental fall.

4.2.4 Excavation Safety

This task involves removing earthen materials from a designated area, thereby creating a man-made cut, trench, or depression in the earth's surface.

Physical Hazards: The physical hazards involved in the excavation of soils are related to the excavation itself and the operation of heavy equipment. The presence of overhead utilities such as power lines requires careful positioning of the excavating equipment in order to maintain a safe distance between the lines and the closest part of the equipment. The presence of underground utilities such as gas lines, power lines, water lines and sewer pipes must be determined prior to beginning the excavation.

Excavations pose significant hazards to employees if they are not carefully controlled. There exists a chance for the excavation to collapse if it is not dug properly, sloped, benched or shored as required by 29 CFR 1926 Subpart P. Protective systems, as required by 29 CFR 1926 Subpart P, must be utilized if the potential for hazardous cave-ins exist. The excavation also is a fall hazard, and employees must pay careful attention to what they are doing or they risk a fall into the excavation. Fall protection, as required by 29 CFR 1926 Subpart M, may be required.

No activities will require personnel to enter an excavation. No employees are permitted to enter any excavation. Equipment placement and other activities shall be done remotely, without entering the excavation.

Control: Before any digging can be done, all underground utilities must be located and identified. The underground utilities will be located and identified by contacting the Underground Facilities Protection Organization (UFPO), reviewing available drawings showing locations of on-site underground utilities, and by contacting the appropriate client representative to mark the location of underground utilities. The Site Manager will meet with utility locators on site prior to marking out the underground utilities. During the on-site meeting, the Site Manager will provide the utility locator with a site figure, which shows the locations where excavation activities will be completed during site activities. The Site Manager will conduct a site walkover with utility locators, as necessary, to visually identify each location where excavation activities are to be completed during activities (as shown on the site figure to be provided to the locators).

General Requirements:

No person shall be permitted underneath loads handled by lifting or digging equipment. Site personnel must be required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials. Operators may remain in the cabs of vehicles being loaded or unloaded when the vehicles are equipped, in accordance with 1926.601(b)(6), to provide adequate protection for the operator during loading and unloading operations.

If excavation work interrupts the natural drainage of surface water (such as streams), diversion ditches, dikes, or other suitable means must be used to prevent surface water from entering the excavation and to provide adequate drainage of the area adjacent to the excavation. Excavations subject to runoff from heavy rains will require an inspection by a competent person.

Where the stability of adjoining buildings, walls, or other structures is endangered by excavation operations, support systems such as shoring, bracing, or underpinning must be provided to ensure the stability of such structures for the protection of employees. Excavation below the level of the base or footing of any foundation or retaining wall that could be reasonably expected to pose a hazard to employees is not permitted except when:

- A support system designed by a competent person, such as underpinning, is provided to ensure the safety of employees and the stability of the structure; or
- The excavation is in stable rock; or
- A registered professional engineer has approved the determination that the structure is sufficiently removed from the excavation so as to be unaffected by the excavation activity; or
- A registered professional engineer has approved the determination that such excavation work will not pose a hazard to employees.

Sidewalks, pavement and appurtenant structures must not be undermined unless a support system or another method of protection is provided to protect from the possible collapse of such structures. Adequate protection must be provided to protect from loose rock or soil that could pose a hazard by falling or rolling from an excavation face. Such protection must consist of scaling to remove loose material; installation of protective barricades at intervals as necessary on the face to stop and contain falling material; or other means that provide equivalent protection.

Employees must be protected from excavated or other materials or equipment that could pose a hazard by falling or rolling into excavations. Protection must be provided by placing and keeping such materials or equipment at least 2 feet (.61 m) from the edge of excavations, or by the use of retaining devices that are sufficient to prevent materials or equipment from falling or rolling into excavations, or by a combination of both if necessary.

Inspections by Competent Person:

Daily inspections of excavations, the adjacent areas, and protective systems must be made by a competent person for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection must be conducted by the competent person prior to the start of work and as needed throughout the shift.

Inspections also must be made after every rainstorm or other hazard-increasing occurrence. These inspections are only required when employee exposure can be reasonably anticipated. Where the competent person finds evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions, exposed employees must be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.

Walkways must be provided where employees or equipment are required or permitted to cross over excavations. Guardrails which comply with 1926.502(b) must be provided where walkways are 4 feet (1.2 m) or more above lower levels. Adequate barrier protection must be provided at all remotely located excavations. All wells, pits, shafts, etc., must be barricaded or covered. Upon completion of exploration and other similar operations, temporary wells, pits, shafts, etc., must be backfilled.

4.2.5 Tools - Hand and Power

Hand and power tools will be utilized as part of this investigation. All tools used during field activities will conform to the standards set both in OSHA 29CFR-1926.300 - 1926.305. To minimize the potential for any safety related accidents, the following measures will be required:

- All hand and power tools shall be maintained in a safe condition;
- Power operated tools shall be equipped with protective guard when in use;
- All hand-held power tools shall be equipped with a constant pressure switch that will shut off the power when the pressure is released;
- Hand tools shall be kept free of splinters or cracks;
- Electrical power tools shall have double-insulated type grounding;
- Electrical tools used in wet environments should have ground fault circuit interrupters (GFCI) in place;
- Electrical cords are not permitted for hoisting or lowering tools;
- All fuel powered tools shall be stopped while being refueled or maintained; and,
- When fuel powered tools are used in enclosed spaces the ambient air will be measured for oxygen and toxic gases.

4.2.6 Vehicular Traffic

Vehicular traffic in and around the facility may pose a hazard to project personnel. Precaution, including reflector vests and cones, should be taken when fieldwork is occurring near traveled areas.

4.2.7 Lifting Excessive Weights

Personnel should exercise caution when lifting any object that weighs greater than 50 pounds. For objects, which weigh less than 50 pounds, proper lifting technique is essential to minimize the potential for injury. No excessively bulky objects should be lifted without assistance.

4.2.8 Sampling Hazards

Field activities will consist of collecting soil and sediment samples for analysis and evaluation. The hazards of this operation are primarily associated with the sample collection methods and procedures utilized.

The SAP outlines the standard methods and procedures that will be utilized for sampling activities. Of these specific procedures, none present hazards that are unique to sampling. Potential hazards that may be encountered are described in other sections of the HASP.

4.2.9 Excessive Noise Levels

Noise generated by heavy equipment may present a hazard during site operations. Excessive noise can physically damage the ear, hinder communications and startle or annoy the workers. All on-site personnel will wear hearing protection (earplugs or earmuffs) when working near heavy equipment and when noise levels may exceed 85dBA.

4.2.10 Heat Stress

Heat stress is the aggregate of environmental and physical work factors that make up the total heat load imposed on the body. The environmental factors of heat stress include air temperatures, humidity, radiant heat exchange, wind and water vapor pressure (related to humidity). Physical work adds to the total heat stress by producing metabolic heat in the body, proportional to the intensity of work.

Heavy physical labor can greatly increase the likelihood of heat fatigue, heat exhaustion and heatstroke, the latter being a life threatening condition. Heat stress monitoring of personnel shall commence when the ambient temperature is 80°F (70°F if chemical protective clothing is worn) or above. Frequency of monitoring shall increase as the ambient temperature rises. Various control measures shall be employed if heat stress becomes a problem. These include:

- Provision for liquids to replace lost body fluids;
- Establishment of a work/rest schedule that allows for rest periods to cool down; and
- Training workers in the recognition and prevention of heat stress.

Specific steps to implement should ambient temperatures pose a hazard include:

- Site workers will be encouraged to drink plenty of water (or nutrient replacement drinks, such as Gatorade) throughout the day.
- On-site drinking water will be kept cool (50°-60°F) to encourage personnel to drink frequently;
- A work/rest schedule that will provide adequate rest periods for cooling down will be established as required;
- All personnel will be advised of the dangers and symptoms of heat stroke, heat exhaustion and heat cramps;

- Employees should be instructed to monitor themselves and co-workers for signs of heat stress and to take breaks as necessary;
- A shaded rest area must be provided. All breaks should take place in the shaded area;
- Employees shall not be assigned to other tasks during breaks;
- All employees shall be informed of the importance of adequate rest, acclimation and proper diet in the prevention of heat stress disorders; and
- The buddy system shall be practiced at all times on site.

The signs of heat stress disorders are described below.

Heat Cramps

Heat cramps are caused by heavy sweating and inadequate electrolyte replacement. Signs and symptoms include muscle spasms and pain in the hands, feet, and abdomen.

Heat Exhaustion

Heat exhaustion occurs from increased stress on various body organs, signs and symptoms include:

- Pale, cool, moist skin;
- Heavy sweating; and
- Dizziness, nausea, fainting.

Heat Stroke

Heat stroke is the most serious form of heat stress, and should always be treated as a medical emergency. The body's temperature regulation system fails and the body temperature rapidly rises to critical levels. Immediate action must be taken to cool the body before serious injury or death occurs. Signs and symptoms of heat stroke include:

- Red, hot, unusually dry skin;
- Lack of, or reduced, perspiration;
- Nausea;
- Dizziness and confusion;
- Strong, rapid pulse and confusion; and,
- Coma.

4.2.11 *Cold Stress*

Cold and/or wet environmental conditions can place workers at risk of cold related illness. Hypothermia can occur whenever temperatures are below 45°F. It is most common during wet windy conditions, with temperatures between 40° to 30°F. The principal cause of hypothermia in these conditions is loss of insulating properties of clothing due to moisture, coupled with heat loss due to wind and evaporation of moisture on the skin.

Frostbite, the other hazard associated with exposure to the cold, is the freezing of body tissue, which ranges from superficial freezing of surface skin layers to deep freezing of underlying tissue. Frostbite will only occur when ambient temperatures are below 32°F. The risk of frostbite increases as the temperature drops and the wind speed increases.

Most cold-related worker fatalities have resulted from failure to escape low environmental temperatures or from immersion in low temperature water. The single most important aspect of life-threatening hypothermia is a fall in the deep core temperature of the body.

Site workers should be protected from exposure to cold so that the deep core temperature does not fall below 97°F. Lower body temperatures will very likely result in reduced mental alertness, reduction in rational decision making or loss of consciousness with the threat of fatal consequences. To prevent such occurrence the following measures are recommended:

- Site workers shall wear warm clothing, such as mittens, heavy socks, etc. when the air temperature is below 45°F. Protective clothing or coveralls may be used to shield employees from the wind;
- When the air temperature is below 35°F, clothing for warmth, in addition to chemical protective clothing will be worn by employees. This will include:
- Insulated suits, such as whole body thermal underwear;
- Wool socks or polypropylene socks to keep moisture off the feet;
- Insulated gloves and boots;
- Insulated head cover such as hard hat winter liner or knit cap; and
- Insulated jacket with wind and water-resistant outer layer.

At air temperatures below 35°F the following work practices are recommended:

- If the clothing of a site worker might become wet on the job site, the outer layer of clothing should be water impermeable;
- If a site worker's underclothing becomes wet in any way, they should change into dry clothing immediately. If the clothing becomes wet from sweating (and the employee is not comfortable) the employee may finish the task at hand prior to changing into dry clothing;
- Site workers should be provided with a warm (65°F or above) break area;
- Hot liquids such as soups or warm drinks should be provided in the break area. The intake of coffee and tea should be limited, due to their circulatory and diuretic effects;

- The buddy system shall be practiced at all times on site. Any site worker observed with severe shivering shall leave the work area immediately; and
- Site workers should be dressed in layers, with thinner lighter clothing next to the body.

5.0 *PERSONNEL RESPONSIBILITIES*

A Health and Safety Management Team has been developed for the site investigation field activities. The following responsibilities will be assigned to designated project personnel for all activities.

The Site Manager will act in a supervisory capacity over all employees who participate in the field activities specified in this work plan. The Site Manager is responsible for ensuring that health and safety responsibilities are carried out in conjunction with the work plan. As part of these responsibilities, the Site Manager will distribute the HASP to all field team personnel and discuss the HASP prior to the start of field activities. All field personnel will sign the Health and Safety Plan Review Record shown in Figure 5-1, verifying that they have read and are familiar with the contents of this HASP.

The Site Safety Officer (SSO) will be responsible for oversight, implementation and compliance of applicable health and safety regulations on-site. The SSO has the following authority and responsibilities:

- responsibility for the field implementation, evaluation and any necessary field modifications of this HASP;
- responsibility for maintaining adequate supplies of all personal protective equipment, as well as calibration and maintenance of all HASP monitoring instruments;
- authority to suspend field activities due to imminent danger situations;
- responsibility to initiate emergency response activities;
- presentation and documentation of field safety briefings;
- maintain daily log of all on-site safety activities; and
- oversight of health and safety practices for subcontractors.

Figure 5-1 HASP Plan Review Record
Cooper Industries, Inc. Crouse-Hinds Facility - North and South Landfills

HEALTH AND SAFETY PLAN REVIEW RECORD

I have read the Health and Safety Plan for the Site and have been briefed on the nature, level and degree of exposure likely as a result of participation in this project. I agree to follow all the requirements in the Health and Safety Plan.

____ _______________

Employee Signature Date

____

Name

____ _______________

Site Manager Signature Date

____

Name

Subcontractors will be provided with a copy of this HASP and will be informed of health and safety concerns, as well as environmental monitoring data collected during field activities. This information will be shared with the subcontractors to assist them in implementing the appropriate health and safety measures. Contractors will be required to prepare and implement their own HASP that is at least as stringent as this project HASP. The contractor is not responsible for the health and safety of subcontractors or other site or facility personnel.

6.0 MEDICAL SURVEILLANCE AND TRAINING

All personnel who are potentially exposed to site contaminants must participate in a medical surveillance program as defined by OSHA at 29 CFR 1910.120 (f) and 29 CFR 1910.134 (if respirators worn). All personnel working at the Site will also possess current safety and health training as defined by OSHA at 29 CFR 1910.120.

6.1 MEDICAL SURVEILLANCE

Initial Medical Exams: All potentially exposed personnel and respirator users must have completed a comprehensive medical examination prior to assignment, and periodically thereafter as defined by applicable OSHA Regulations. The initial and periodic medical examinations may include the following elements:

- Medical and occupational history questionnaire;
- Physical examination;
- Complete blood count, with differential;
- Liver enzyme profile;
- Blood lead levels,
- Chest X-ray, at a frequency determined by the physician;
- Pulmonary function test;
- Audiogram;
- Electrocardiogram for persons older than 45 years of age, or if indicated during the physical examination;
- Drug and alcohol screening, as required by job assignment;
- Visual acuity; and
- Follow-up examinations, at the discretion of the examining physician.

The examining physician provides the employer and employee with a letter summarizing his findings and recommendations, confirming the worker's fitness for work and ability to wear a respirator. Documentation of medical clearance will be available for each employee during all project site work. Medical clearance will also include the most recent fit testing for all respirator users, current within the last year.

Subcontractors will certify that all their employees have successfully completed a physical examination by a qualified physician. The physical examinations must meet the requirements of 29 CFR 1910.120 and 29 CFR 1910.134. Subcontractors will supply copies of the medical examination certificate for each on-site employee.

Other Medical Examinations: In addition to pre-employment, annual, and exit physicals, personnel may be examined:

- At employee request after known or suspected exposure to toxic or hazardous materials;
- At the discretion of the client, HS professional, or occupational physician in anticipation of, or after known or suspected exposure to toxic or hazardous materials; and
- At the discretion of the occupational physician.

Periodic Exam: Following the initial examination, all site personnel must undergo a periodic examination, similar in scope to the initial examination.

Medical Restrictions: When the examining physician identifies a need to restrict work activity, the employee's supervisor must communicate the restriction to the employee and the Site Manager. The terms of the restriction will be discussed with the employee and the Site Manager.

6.2 *HEALTH AND SAFETY TRAINING*

All personnel working at the Site will participate in health and safety training, including:

- Initial 40-hour HAZWOPER training.
- Annual eight-hour HAZWOPER training following the initial 40-hour training.
- Annual respiratory protection training.
- The SSO will also conduct daily briefings with all site employees covering the activities and safety procedures.

Documentation of training will be available for each employee during the project site work.

7.0 PERSONAL PROTECTIVE EQUIPMENT

7.1 PURPOSE/APPROACH

A critical aspect of field crew safety is appropriate personal protective equipment (PPE). PPE refers to the types of footwear, headwear, eyewear, ear wear, coveralls, gloves and respiratory protection each individual will wear while performing a specific task(s) and exposed to a particular chemical(s) at a given concentration(s). The levels of PPE are referred to as Level D, Level C and Level B; with Level D requiring the least amount of PPE and Level B the most.

The SSO will decide when it is necessary to upgrade, downgrade or modify the existing level of protection based on field monitoring and action levels described in Section 4.0. The SSO will make entries in the health and safety field book detailing each days PPE, task and if the level of PPE is modified, the reason for each change. Each level's PPE requirements may be modified by the SSO as needed. The different levels of PPE and equipment required at each level are described in the following sections and is based on 29 CFR 1910.120.

7.2 LEVEL D PROTECTION

Minimum level of protection for any field activities.

Level D PPE will consist of the following:

- Coveralls or a work uniform affording protection for nuisance contamination.
- Steel-toe, steel-shank work boots.
- Safety glasses.
- Hard hat (if working around equipment or machinery).

Note: Hand washing is imperative following any contact with soils.

Optional Equipment or as Required by the SSO

- Disposal Tyvek® or rubber outer boots.
- Chemical resistant gloves (recommend nitrile or neoprene).
- Disposable outer chemical coveralls, such as Tyvek®, poly coated Tyvek® or Saranex®.
- Hearing protection.

7.3 *LEVEL C PROTECTION*

Minimum level of protection when respirators required.

Level C PPE will consist of:

- Full-face air purifying respirator (APR) equipped with appropriate P100 (HEPA equivalent) and/or organic vapor cartridges. Note: All personnel requiring respiratory protection must be medically approved and "fit-tested" with the respirator to be used. Appropriate powered air-purifying respirators (PAPR) may be utilized if specified by the SSO. Only with the approval of the SSO can half-mask air purifying respirators be donned. Chemical cartridges will be changed on a daily basis.
- Chemical-resistant clothing such as Tyvek®, poly-coated Tyvek® or Saranex®.
- Outer chemical-resistant (recommend nitrile or neoprene) gloves and inner latex surgical gloves. Outer gloves should be tapped to the clothing sleeve.
- Steel-toe, steel-shank work boots with Tyvek® or rubber boot coverings. Over boots should be taped to clothing leg.
- Hard hat (if working around equipment or machinery).

Optional Equipment as Required by the SSO

- Escape SCBA
- Hearing protection

7.4 LEVEL B PROTECTION

Level B PPE will consist of:

- Self-contained breathing apparatus (SCBA) in a pressure demand mode, or supplied air with escape SCBA in the pressure demand mode.
- Chemical-resistant clothing such as Tyvek®, poly-coated Tyvek® or Saranex®.
- Outer chemical-resistant (recommend nitrile or neoprene) gloves and inner latex surgical gloves. Outer gloves should be tapped to the clothing sleeve.
- Steel-toe, steel-shank work boots with rubber over boots. Over boots should be taped to clothing leg.
- Hard hat (if working around equipment or machinery).

8.0 SITE OPERATION AREAS AND DECONTAMINATION

Site operation areas will be formally set up for all field activities. Personal decontamination procedures will be closely adhered to upon entering or leaving all work areas. Section 8.1 describes the three zones used to control site operation areas and Section 9.0 describes decontamination procedures.

8.1 SITE OPERATION AREAS

A three-zone control system will be used during activities as determined necessary by the SSO. The purpose of the zones is to control the flow of personnel to or from potentially contaminated work areas. Guidelines for establishing these zone/areas are as follows:

Exclusion Zone (EZ): Primary exclusion zones will be established around each field activity and, at a minimum, this zone will radiate to a distance of 25 feet from the point of operations. Appropriate personal protective equipment must be worn in this zone. This zone will be separated from the contaminant reduction zone by cones or barrier tape to prevent personnel from entering the exclusion zone boundary without appropriate protective equipment or leaving without proper decontamination.

Contaminant Reduction Zone (CRZ): The CRZ is the transition area between the EZ and the Support Zone (clean area). All personnel and equipment must be decontaminated in the CRZ upon exiting the EZ and before entering the Support Zone. The CRZ will be set up along the perimeter of the EZ at a point upwind of field activities.

Support Zone (SZ): The support zone is considered to be uncontaminated; as such, protective clothing and equipment are not required but should be available for use in emergencies. All equipment and materials are stored and maintained within this zone.

Protective clothing is donned in the support zone before entering the contaminant reduction zone.

9.0 DECONTAMINATION GUIDELINES

In the situation where work areas are controlled using the three-zone concept, all personnel must exit the EZ through an established CRZ. At a minimum, CRZ provisions will include a potable water supply, wash buckets or sprayers, cleaning tools, hand soap and clean towels. The applicable CRZ sequence of events should include:

- Wash outer boots, coveralls and outer gloves;
- Remove any outer boot or glove tape;
- Remove outer boots. Either store or properly dispose of outer boots;
- Re-clean and remove outer gloves. If gloves will be reused, inspect and stage the gloves; otherwise properly dispose of the gloves;
- Remove chemical resistant coveralls with care so that hands or inner clothing do not come in contact with any contaminated surfaces. Properly dispose of coveralls;
- Remove respirator and stage in CRZ area. Respirators shall be cleaned and disinfected with a sanitizing agent between uses;
- Remove and dispose of inner gloves; and
- Thoroughly wash hands and face.

All contaminated equipment (such as the drill rig, excavator/back-hoe, tools and sampling equipment, etc.) will be thoroughly decontaminated prior to leaving the EZ. The extent of the decontamination (such as a separate decontamination pad) will be determined by the SSO. The SSO will be responsible for inspecting the decontamination of all equipment prior to leaving the EZ and the Site.

For fieldwork not using the three-zone concept (e.g., soil and sediment sampling with hand-operated equipment) portable wash stations will be utilized for easy and efficient access. The wash station shall consist of a potable water supply, hand soap and clean towels. Portable sprayer units filled with Alconox® solution and potable water will also be available to wash and rinse off grossly contaminated boots, gloves and equipment. The SSO will monitor decontamination procedures to ensure their effectiveness. Modifications of the decontamination procedure may be necessary as determined by the SSO.

9.1 MANAGEMENT OF GENERATED WASTES

All wash and rinse waters, discarded health and safety equipment and discarded sampling equipment will be segregated and placed in appropriate containers, as required. These containers will be properly labeled and stored in a secure area on site while arrangements are made for disposal.

10.0 SITE ACCESS AND SITE CONTROL

Access to site activities will be limited to authorized personnel and should be coordinated with the site Owner. Such authorized personnel include contractor's employees, subcontractors and representatives of the site Owner. However, access into the established contaminant reduction and exclusion zones will be limited to those authorized personnel with required certifications and wearing appropriate personal protective equipment. The exclusion zones will be monitored by the SSO to ensure personnel do not enter without proper personal protection equipment.

All work zones will be clearly marked and roped or fenced off to insure that non-authorized personnel are kept at a safe distance. Excavations or trenches/ditches will be secured during off-hours and any stockpiled soils will be covered with plastic.

11.0 EMERGENCY RESPONSE

In the event of an emergency, the SSO will coordinate response activities. Appropriate authorities will be notified immediately of the nature and extent of the emergency. Table 11-1 provides emergency telephone numbers that will be posted within the support zone or any other visible location. Directions to the nearest hospital are also included on Table 11-1.

11.1 RESPONSIBILITIES

The SSO will be responsible for initiating response to all emergencies, and will:

1. Notify appropriate individuals, authorities and health care facilities of the activities and hazards of the field activities.
2. Ensure that the following safety equipment is available: eyewash provisions, first aid supplies and fire extinguisher.
3. Have working knowledge of all safety equipment.
4. Ensure that directions of the most direct route to the nearest hospital is present with the emergency telephone numbers.
5. For a release incident or major vapor emission, determine safe distances and places of refuge.
6. For a release incident or major vapor emission, contact the local emergency response coordinator (Fire Department) and NYSDEC Spill Response (if appropriate).

Table 11-1
Emergency Contacts
Cooper Industries, Inc. Crouse-Hinds Facility - North and South Landfills

Project Health and Safety Coordinator: Stephen O. Valentine, CIH

Project Director: James F. Blasting, P.G.

Project Manager: Mark Schumacher

Ambulance (Rural/Metro Medical Services)	911 or 471-0102
Hospital (St. Joseph's Hospital)	(315) 448-5111
Fire Dept. (City of Syracuse – **EMERGENCY**)	911 or (315) 473-5525
NYSDEC Spill Hotline	1-800-457-7362
Police (Salina Police Department)	911 or (315) 471-3257
Police (City of Syracuse)	911 or (315) 442-5200

Directions to Hospital: From Crouse-Hinds Facility (See also Figure 11-1).

1: Depart on US-11 [Wolf St] (South)	0.9 miles
2: Turn LEFT (East) onto US-11 [N Salina St]	1.4 miles
3: Turn LEFT (East) onto US-11 [N State St]	0.0 miles
4: Turn LEFT (North-East) onto E Willow St	0.0 miles
5: Arrive	0.0 miles

Hospital address is 301 Prospect Avenue, Syracuse, New York 13203 (2.5 miles from the Site).

Figure 11-1 Directions to Hospital

From:	Wolf St & 7th North St Syracuse, NY 13208
To:	Prospect Ave Syracuse, NY 13203

Directions	**Distance**
1: Depart on US-11 [Wolf St] (South)	0.9 miles
2: Turn LEFT (East) onto US-11 [N Salina St]	1.4 miles
3: Turn LEFT (East) onto US-11 [N State St]	0.0 miles
4: Turn LEFT (North-East) onto E Willow St	0.0 miles
5: Arrive	0.0 miles

Total Distance:	2.5 miles

11.2 ACCIDENTS AND INJURIES

In case of a safety or health emergency at the Site, appropriate emergency measures will immediately be taken to assist those who have been injured or exposed and to protect others from hazards. The SSO will be immediately notified and will respond according to the seriousness of the injury.

11.3 SITE COMMUNICATIONS

Telephones (either temporary landlines or cellular) will be located prior to the start-up of field activities, and will be used as the primary off-site communication network. Radios will be used at the Site, as needed.

11.4 RESPONSE EVALUATION

The effectiveness of response actions and procedures will be evaluated by the SSO. Improvements will be identified and incorporated into this and future plans.

12.0 ADDITIONAL SAFETY PRACTICES

The following safety precautions will be enforced during the field activities:

1. Eating, drinking, chewing gum or tobacco, smoking or any practice that increases potential hand-to-mouth transfer and possible ingestion of material is prohibited in areas designated as contaminated by the SSO.

2. Hands and face must be thoroughly washed upon leaving the work area and before eating, drinking or any other activity.

3. Whenever decontamination procedures for outer garments are in effect, the entire body should be thoroughly washed as soon as possible after the protective garment is removed.

4. No facial hair that may interfere with the effectiveness of a respirator will be permitted on personnel required to wear tight fitting respiratory protection. The respirator must seal against the face so that the wearer receives air only through the air purifying cartridges. Fit-testing shall be performed prior to respirator use to ensure a proper seal is obtained.

5. Even when wearing protective clothing, contact with potentially contaminated surfaces should be avoided when possible. One should not walk through puddles; mud or other discolored surfaces; kneel on ground; lean, sit or place equipment on drums, containers, vehicles or the ground.

6. Medicine and alcohol can enhance the effect from exposure to certain compounds. Alcoholic beverages will not be consumed during work hours by personnel involved in the project. Personnel using prescription drugs during the project may be precluded from performing specific tasks (e.g. operating heavy equipment) without authorization from a physician.

7. Personnel and equipment in the work areas will be minimized.

8. Work areas and decontamination procedures will be established based on prevailing site conditions.

9. Respirators will be issued for the exclusive use of one worker and will be cleaned and disinfected after each use.

10. Cartridges for air-purifying respirators in use will be changed on a frequency determined by the SSO, with detectable odor/breathing resistance or after each days use, whichever is shorter.